

# eLearning Papers 45

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## Language Learning and Technology

### Editorial

Language Learning and Technology

### In-depth

Personalized MOOCs for Language Learning: A challenging proposal

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-1](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-1)

Improved German Spelling Acquisition through Learning Analytics

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-2](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-2)

A Spanish Inverted Classroom: Students' Perceptions and Implications for Teachers

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-3](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-3)

Benefits of integrating Online interactivity in formative assessment in language learning at beginner level

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-4](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-4)

Machine Translation and the Disruption of Foreign Language Learning Activities

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-5](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-5)

Mobile Informal Language Learning: Exploring Welsh Learners' Practices

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_In Depth\\_45-6](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_In Depth_45-6)

### From the field

Multilingual CALL: More than just translation drills?

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_From-field\\_44\\_7](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_From-field_44_7)

Massive Open Online Course Mentoring for a Connected Community of Practice of Language Teachers

[http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology\\_From-field\\_44\\_8](http://openeducationeuropa.eu/en/article/Language-Learning-and-Technology_From-field_44_8)

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# Language Learning and Technology

By and large, languages, both as first, second or foreign languages remain one of the most important core subjects at every educational level. In early stages, their inclusion in the curriculum is intricately connected with (pre-)literacy practices, but also as a main driver for the successful integration of minority students learning a second language. In addition, the attainment of a certain level of a foreign language by the end of compulsory education is a common goal in most educational systems around the globe. Arguably, the key drivers of success in learning a language range from motivational to attitudinal, but ultimately they also have to do with the amount of target language use, the access to quality input, and especially language teachers' readiness to incorporate the latest educational trends effectively in the language classroom, educational technologies amongst them. This special issue features recent developments and innovations in the field of Computed Assisted Language Learning and expects to serve as a springboard for a series of existing innovative practices in the area of technology enhanced language learning and teaching.

A recent OECD study (Chiesa et al. 2012) underpins a number of factors that play a role in successful second and foreign language learning in today's society. These factors range from motivation, to culture, identity and neuroscience and focus attention on "what happens outside of the formal learning context". This issue examines several of these settings and present a wealth of evidence from often overlooked topics as varied as online formative assessment, intelligent dictionaries, inverted or flipped classrooms, interactive multilingual software and games, Language MOOCs, machine translation, and mobile language resources in six in-depth articles and two from the field reports.

The first in-depth paper in this issue explores the impact of using MOOCs for teaching and learning a Foreign Language by examining student support strategies that combine collaborative and personalized learning and assessing the educational model behind several language MOOC approaches. Ebner et al. give an account of the development of an intelligent dictionary which provides both feedback to the learner and qualitative text analysis for the teacher implementing learning analytics methods which in turn help enhance the learning materials. In the third in-depth paper, Rojo lays out the key elements necessary for running a successful flipped classroom and offers some insights both into the necessary tools to create high-quality digital educational materials and the technical skills necessary to develop them for those interested in using this methodology. Trevino & Lopez-Vazquez address the benefits of online automated feedback and face-to face student cooperative learning and put forward a proposal for blended formative assessment. Case presents teachers' and students' attitudes toward Machine Translation and suggests that the initial beliefs and reluctances should be channeled to change teaching practices by incorporating Machine Translation in the process of text creation, paving the way for language students to approach the creation of texts in new ways by engaging with authentic language materials. Finally, Jones explores the potential of technological resources, particularly mobile devices, to support self-directed Welsh learning.

The first from the field article presents two different projects that approach multilingual practices from different perspectives: an interactive multilingual storytelling software and a virtual reality language learning game. Both projects portray the challenges and opportunities that multilingual CALL can bring about, namely overcoming the tendency to project the image of the monolingual learner as a prototype and pushing for the creation of multilingual CALL products that support multilingual speech practices. The second from the field paper examines the mentoring strategies

followed in a MOOC which contributed to fostering the development of communities of practice online among language teachers.

The choice of articles in this issue captures the potential and diversity of innovational developments in technology enhanced language learning and aims at broadening our understanding of how all of these diverse approaches interplay and contribute to moving the field forward.

Chiesa, B. D., Scott, J., & Hinton, C. (2012). Languages in a Global World: Learning for Better Cultural Understanding. OECD Publishing. 2, rue Andre Pascal, F-75775 Paris Cedex 16, France.

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## Personalized MOOCs for Language Learning: A challenging proposal

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The appearance of Massive Open Online Courses (MOOCs) is a turning point in language education and has the characteristics of online and open language learning access and massiveness. But what is the impact of this new educational reality on teaching and learning a Foreign Language and how could language teachers provide an efficient support to language learners combining collaborative and personalized learning? Is there any MOOC platform that is based on an adequate educational model for successful language learning and teaching?

This paper will try to answer these questions but will first present the different MOOC pedagogical models that are generally used, the current situation of Language MOOCs as well as their general teaching and learning philosophy. It will also analyze the key characteristics of a successful online language learning environment and it will explain how adaptive and personalized learning connected to collective learning could offer an efficient language learning experience. Next, the paper will propose the design of a language MOOC platform that supports adaptive and personalized language learning and embraces autonomy, creativity, social interaction and collaboration. At the end, the author will draw some first conclusions and will share the next steps of her on going research.

### Tags

MOOCs, PLEs, Foreign  
 Language Learning,  
 MOOCs' Design

### 1. Introduction

In the last decades, various distance and open learning programmes and online educational delivery models have been developed to address access, affordability, and personalised learning in higher education (Hill, 2012). Nowadays with the advent of Massive Open Online Courses (MOOCs) new online educational models have emerged that promise to offer flexibility, affordable access and fast-track completion for free or at a low cost for whoever is interested in learning (Yuan & Powell, 2013). In fact, MOOCs support the idea of distributed intelligence and lifelong learning, open learning, open educational resources and represent a new generation of online education that encourages the development and delivery of courses that are massive, open, participatory (Perifanou, 2014b).

Generally, the term MOOC has quickly become a catch-all to describe all sorts of unbundled online learning, but there are clearly a number of different models under the same umbrella (Kelly, 2014). So what is a MOOC? "A MOOC is a course of study available over the Internet without charge to a very large number of people: anyone who decides to take a MOOC simply logs on to the website and signs up" (Oxford dictionaries, 2014).

The Horizon Report 2013 has identified the MOOCs development as “the most important trend in education” (Horizon Shortlist Report, 2013) while the Guardian (Boxal, 2012) has compared the evolution of MOOCs to the dot.com phenomenon when “disruptive innovations reshaped the global information, media and news industries, by shifting market power from the established players to parvenu start-ups and alternative providers”. Basically, MOOCs contain key characteristics of disruptive innovations (Bates, 2013). These typically combine a new technology that has the potential to evolve rapidly, with an innovative business model (Christensen, 2003).

In other words, this new form of open and massive education brings new opportunities for innovation in higher education that have already allowed institutions and academics to explore new online learning models and innovative practices in teaching and learning. Some first experiences show that some HE institutions see MOOC development as a sustaining innovation to improve their performance through experiments with new forms of online learning.

But what is the impact of this new educational reality on teaching and learning a Foreign Language and how could language teachers provide an efficient support to language learners combining collaborative and personalized learning? Is there any MOOC system/platform that is based on an adequate educational model for successful language learning and teaching? How PLEs & MOOCs can be connected in a Language Learning Context?

In the following paragraphs this paper will try to answer these questions with specific proposals but will first present the different MOOC pedagogical models that are generally used, the current situation of Language MOOCs as well as their general teaching and learning philosophy. Then, the paper will analyze the key characteristics of a successful online language learning environment and it will explain how adaptive and personalized learning connected to collective learning could offer an efficient language learning experience. Next, it will propose the design of a language MOOC platform that supports adaptive and personalized language learning which emphasizes the building of Personal Language Learning Environments that can promote autonomy, creativity, social interaction and collaboration.

## 2. MOOC TYPES AND PEDAGOGICAL APPROACHES

There is a variety of pedagogical approaches being adopted in different MOOCs, some emphasizing individual learning through interactive materials, others focusing more on social learning (Conole, 2013). This basically depends on the type of the MOOC and the platform offered by the provider. Generally, the very nature of MOOCs, their structure and the associated pedagogy differ so much that it is even questionable referring to them by the same term. One distinction of MOOCs was made by Stephen Downes who divided MOOCs in two types: 1) The cMOOCs (C for “connectivist”) and 2) x-MOOCs (extended MOOC, similar to standard online courses but with larger student numbers) (Perifanou, 2014b). Siemens (2012) states that “*cMOOC model emphasises creation, creativity, autonomy and social networking learning*” and “*focus on knowledge creation and generation*” whereas the *xMOOC model emphasizes “a more traditional learning approach through video presentations and short quizzes and testing and focus on knowledge duplication.”*

More specifically, the cMOOCs stand in the tradition of Connectivist philosophy, and refer to the work of Ivan Illich. As a sharp critic of institutionalised education, Illich proposed in 1970 to establish “learning webs” by using new technology (Gaebel, 2013). Yuan and Powell (2013) sustain that, “cMOOCs provide great opportunities for non-traditional forms of teaching approaches and learner-centred pedagogy where students learn from one another. Online communities “crowd-source” answers to problems, creating networks that distribute learning in ways that seldom occur in traditional classrooms in universities”. In other words, the connectivist MOOCs encourage creation of artifacts and networked learning. Course products are usually blog posts, images, diagrams, videos etc. However, their success is highly dependent on participants’ interaction via networking tools such as discussion forums, Twitter, Diigo etc. The instructor of cMOOCs has the role of a facilitator who aggregates, reviews, summarizes and reflects on activities in daily/weekly newsletter (Rodriguez, 2013).

On the other hand, xMOOCs have another educational philosophy that focus more on the transmission of knowledge and what educators might term “drill and practice” (Hollands, & Tirthali 2014). They are based on the cognitive-behaviorist pedagogy and support a tutor-centric model that establishes a one-to-many relationship to reach massive numbers category (Bárcena, et.al, 2014). More specifically, these courses are pre-

determined, structured and sequenced in weekly activities. Their educational materials include short, content-based videos, readings, problem sets as well as quizzes (auto-graded) and peer-graded assessments while the discussion forum participation is optional (Hollands & Tirthali, 2014).

Another researcher has also proposed a simplified MOOCs' classification (Morisson, 2013). He claims that MOOCs differ in basic characteristics: a) the type of the instructional methods used, b) the type of the course materials, c) the level of interaction, d) the activities and assessments provided, and e) the interface of the course site. One more example of MOOCs' categorization based especially on pedagogy is the taxonomy of 8 types of MOOC that has been developed by (Clark, 2013).

Finally, Conole (Conole, 2013) has made an effort to classify MOOCs in terms of a set of dimensions that can be used to define them such as: *"a) the degree of openness, b) the scale of participation (massive), c) the amount of use of multimedia, d) the amount of communication, e) the extent to which collaboration is included, f) the type of learner pathway (from learner centered to teacher-centered and highly structured), g) the level of quality assurance, h) the extent to which reflection is encouraged, i) the level of assessment, l) how informal or formal it is, m) autonomy, and n) diversity"*.

More efforts of categorisation of MOOCs have been made (Lukeš, 2012; Lane, 2012), as well as interesting proposals, like a process by which educators might "mediat[e] the dichotomy between xMOOC and cMOOC" (Grünwald et al., 2013) or the notion of an "hybrid MOOC" (Waite et al., 2013). Furthermore, some teachers and organisations are rejecting the MOOC acronym altogether, in favour of "SPOCs: Small Private Online Course" (Crimson & Hashmi, 2013), "DOOCs: Distributed Open Collaborative Course" (Jaschik 2013), "BOOCs: Big (or Boutique) Open Online Course" (Hickey, 2013; Tattersall, 2013) and "POOCs: Participatory Open Online Course" (Daniels, 2013).

Analyzing the different types of MOOCs and the different classifications made by the researchers it is clear that it is not simple neither to classify MOOCs, nor the pedagogies adopted. It is obvious that MOOCs are multiple. Although MOOCs were first launched by connectivists, connectivism is not intrinsic to MOOCs (Clarà & Barberà, 2013) and we can no longer define them either as a single "transformative" entity or clearly position them in terms of the previously dominant cMOOC/xMOOC binary. What is sure is that open education brings new opportunities for innovation in higher education that will

allow institutions and academics to explore new online learning models and innovative practices in teaching and learning, but the process is not easy (Yuan & Stephen, 2013). In general, a much greater up-front investment of resources, time and careful planning is needed when designing distance-learning courses (Casey, 2012). In this case, researchers, teachers, instructional designers, policy makers are still exploring possible learning and teaching scenarios for the design, organization and implementation of successful MOOCs. The truth is that there is not a single scenario but there are many factors that need to be considered like the different disciplines, the educational needs of the learners, the platform chosen and the pedagogy that could support, the teacher's role, the material ("open" or not) intellectual property issues, assessment, analytics, costs etc.

In the next paragraphs will be discussed the current situation of language MOOCs as well as a series of MOOC problems that need to be resolved in order to design more efficient MOOCs in future.

## 3. LANGUAGE MOOCs (MOOLCs) & "OPEN" MOOC ISSUES

A considerable amount of research has been conducted in the last decades with regard to distance language learning, and generally to Computer Assisted Language Learning that has shown the tremendous possibilities that technology can offer in the field of language learning (Perifanou & Economides, 2014). Nowadays with the advent of MOOCs, even though there is a hype surrounding their arrival on the academic horizon (Barber et al. 2013) there is little evidence of research related to the potentials of MOOCs in Foreign Language Education and a lot of un-addressed issues. Despite this, there is a growing interest about Language MOOCs as they are multiplying at a rapid pace (Perifanou & Economides, 2014; Gee, 2012). According to the findings of this ongoing research, currently there are more than 16 MOOC platforms that offer more than 50 free Language Learning courses. More than a half of them are English Language MOOCs but there is also a great interest for other languages like Arabic, Spanish, Japanese, Chinese etc. (Perifanou & Economides, 2014). One example is the case of a German Language MOOC that won the First Prize for the Best MOOC in the Miriada X platform (Castrillo, 2013). Another example is the case of the three language courses offered by the platform "I learn" ('Aprendo'/UNED). The Language MOOCs of this platform were the most populated courses. In fact, the students that have enrolled in the English courses reached both



the number of 78.690 while 22.438 students enrolled in the “German for Spanish speakers” course (Read & Rodrigo, 2013).

Based on these findings, it is clear that language skills are in much demand and the need for related on line courses is widespread. This can be justified as language literacy is one of the essential skills for the 21st century (Stoll & Giddings, 2012). Generally, with the advent of Web 2.0, language competencies and intercultural skills are more than ever key qualifications for everyone who aims to work and live in this new reality. This growing interest for language literacy constitute Language MOOCs as an evolving and expanding area with new developments likely to offer greater variety of courses and more innovative social learning pedagogies. Currently, practitioners, language teachers, instructional designers are exploring how to design efficient language courses that have the characteristics of open access and massiveness.

The results of this ongoing research (Perifanou & Economides, 2014, Perifanou, 2014a, Perifanou, 2014b) have shown that there are still many issues that need to be resolved and for that reason there are teachers (Robinson, 2013) and researchers (Read, in press; Romeo, 2012; Monje, Bárcena, & Read, 2013) who sustain that MOOCs’ format is especially problematic for the Language Education context. More concretely, the pedagogy adopted in Language MOOCs in most cases lacks interactivity and follows a cognitive behavioral and one-to-many pedagogical model which mostly offers automated or right-and-wrong answers (Perifanou & Economides, 2014). That means that these courses don’t allow learners to develop their own learning initiatives/pathways and they are not learner-centered and peer drive. Additionally, they don’t support community building and they don’t promote collective intelligence as well as user created and informal content. Furthermore, the current type of Language MOOCs don’t allow learners to build a personal network of people, who can offer feedback and support. Most MOOC platforms can accept a massive number of participants, offer usability, have good technical performance and provide high security but they offer a poor variety of communication tools (synchronous & asynchronous) (Perifanou & Economides, 2014). This prevents learners from interacting with other learners as well as with authentic audience. The time zone differences are also important barriers for students’ interaction and collaboration. The high heterogeneity among students’ profile (language level, learning needs and objectives/intentions, learning style etc.) is also a big issue because it is impossible for a language teacher to provide a successful language lesson

(Perifanou, 2014 b). Besides this, the unbalanced teacher-student ratio remains also a big issue (Romeo, 2012; Monje, Bárcena, & Read, 2013). Providing feedback to a massive number of students is really difficult especially if there is no teachers’ group support. Even though assessment is not the priority of a Language MOOC but the development of specific skills such as basic language skills (reading, writing, listening, speaking), good communication skills, higher order thinking skills, cultural skills etc., it needs lots of effort and time to support the entire learning process of the participants. As it is shown in recent researches (Read, 2013; Monje, Bárcena, & Read, 2013) the lack of support from teachers, who cannot respond to all learners’ requests for advice remains the main reason for the big number of dropouts. It’s worth mentioning that the monitoring of students’ performance in MOOC platforms can be enhanced by automated learning technologies like Analytics and Semantics (UUK, 2013) that can provide an extremely useful summary but this still is not a solution. Language MOOCs need the continuous teachers’ support during the language course. Furthermore, it’s important to be added that most of the platforms don’t use tools that could support peer assessment which could definitely provide a great support to the learning process of participants.

Apart from the issues that are already mentioned, content and intellectual property as well as permission for organizing or teaching a language course are also some issues that need to be carefully examined because there is no common rule. For example, in platforms like Coursera, either the professor or the university owns the intellectual property while Udemy’s professors also own the content and the intellectual property. There is typically joint ownership between Udacity and any outside. That means that even though MOOCs are characterized as “open access,” in fact that means that anyone can enroll for free, but they are rarely “open” in the OER sense. Regarding the creation and teaching of a MOOC, the situation differs as well depending the chosen platform. For example, platforms like Coursera and edX are largely “closed platforms” and that means that in order to create a course, you must be a faculty member at one of their partner universities. On the other hand, other platforms like Udemy, P2PU, and Canvas.net, operate under a different logic, allowing a much wider array of individuals to design and teach courses (Kelly, A. 2014).

Bearing in mind all these important issues, this paper proposes an adaptive & personalized language learning MOOC system/platform that is based on the Massive Open Online Interactive Language Learning Environment (MOILLE)’s framework

elements. This framework has been analyzed in previous publications and it is part of the same research that the author of this paper is conducting. In this research it is warmly believed that designing an efficient language learning environment that could be adapted to the learning needs of a massive number of language learners remains a big challenge for language teachers and instructional designers.

Before the presentation of the proposed Language MOOC platform, it is important to analyze why social interaction, authentic collaboration and building community in combination to personalized learning are key factors for a successful language learning course massive or not.

### 4. KEY FACTORS FOR A SUCCESSFUL ONLINE LANGUAGE LEARNING ENVIRONMENT

Alm (Alm, 2016) maintains that an efficient Language Learning environment consists of two learning communities: the learning community in the classroom, and the target language community. It is known that increasing contact with the target language appears to be one of the most critical factors for successful Language Learning. Language is about communication, and there is nothing more motivating than being able to use one's newly acquired language skills in an authentic environment (Perifanou, 2010). New technologies can facilitate this process. But which are key factors for successful Language Learning generally and how these can change in an on line environment?

A framework that briefly describes the prerequisite conditions for successful Language Learning has been proposed by Egbert et al. (1999). They mention eight key factors: 1) Learners have opportunities to interact and to negotiate meaning; 2) Learners interact in the target language with an authentic audience; 3) Learners are involved in authentic tasks; 4) Learners are exposed to and encouraged to produce varied and creative language; 5) Learners have sufficient time and feedback; 6) Learners are guided to attend mindfully to the learning process; 7) Learners work in an atmosphere with an ideal stress/anxiety level; 8) Learner autonomy is supported. Based on this framework, it is clear that an efficient Language Learning environment should be enjoyable and should provide opportunities for authentic interaction and authentic tasks to the learners. Furthermore, it should support learners' autonomy and should give them sufficient time for practice and the possibility to get feedback and guidance when they need them. (Perifanou, 2014a).

The advent of Internet has brought positive results to Language Learning as it has succeeded to bridge the learning distances. Nowadays, the Web 2.0 innovative and disruptive technologies have brought together the classroom's Language Learning community with the target language community in multiple and motivating ways (Perifanou, 2009). In fact, they have facilitated some of the key characteristics for successful Language Learning like: input/output, social interaction, authenticity, exposure, feedback, and learner autonomy.

This new technological reality has brought also a great impact on the teaching and learning methodologies. In fact, those have started to focus mostly on cognitive and sociocultural theories and less on behaviorism (Scarino & Liddico, 2009).

Some critical factors that should be considered by language teachers and instructional designers before the organization and implementation of a successful online learning course are described by Dillon and Gunawardena (1995) who have identified technology, instructor characteristics, and student characteristics as two critical factors in online learning. Additionally, Volery and Lord (2000) recognized technology, instructor, and previous use of technology as the three critical factors. Similarly, Alberth (2011) argues that a number of other critical factors such as instructional design (pedagogy), unit characteristics, provision of support for both instructors and students, should be seriously taken into account when considering opting for online delivery.

The question that is emerging is if all these factors change when we have to organize online language courses that are targeted to a massive number of participants. This paper aims to emphasize that a Language MOOC cannot be efficient if it doesn't take place in a learning environment that is based on an adoptive and personalized system which promotes and sustains collaboration and interaction among language learners as well as with authentic speakers. In the following paragraphs, it will be analysed why adaptive and personalized learning is important in a Language Learning context.

### 5. PERSONALIZED LANGUAGE LEARNING

Continued Learning process: key issues

Learning a foreign language is not an easy process. It needs a great personal effort, an easy access to authentic materials



and a continue contact with authentic speakers. The advent of new Web 2.0. technologies was a turning point for Language Education as it brought unlimited opportunities for authentic interaction as well as a great variety of resources and tools that could support efficiently the whole language learning process.

Language learners though don't follow a common learning "scenario". Each of them have different learning needs and learning objectives as well as a different learning mode and learning capabilities. That means that language teachers should take under consideration how a learner could learn faster and easier a foreign language. In other words, language teachers should try to explore learners' motivations and the language learning strategies that would be suitable for them. According to Wenden and Rubin (1987) and Oxford (1990), the term 'strategy' in the field of Language Learning indicates that a language learner uses a specific action or behavior to improve language performance. The language learning strategies (LLS) have been classified into three categories: metacognitive strategies, cognitive strategies and socio-affective strategies (O'malley & Chamot, 1990). Oxford (1990) proposes three types of social LLS: a) asking questions (i.e. Asking questions for clarification and verification or for correction, b) co-operating with others (i.e. Co-operating with peers, or with proficient users of the new language), and c) empathizing with others (i.e. Developing cultural understanding, or becoming aware of others' thoughts and feelings) (Oxford, 1990, p. 21). According to Rubin (1975), the majority of language learners would use the social learning strategies in learning a foreign language (i.e. English) more than the other strategies. Furthermore, the researcher adds that the good language learners would apply different strategies in learning and using a language, whereas the poor learners would use the same strategies in their learning. In every case the important issue is that there is no a single way of learning a language for everyone and that each learner is a unique case and needs to make his/her own choices. That means that a personalized way of learning that takes place in an authentic environment with the language teacher's support as well as the support of the peers would be an ideal way of learning a language.

### PLEs and Language Learning

According to Lantolf and Thorne (2006), personal learning can be increased through forms of collaboration with their peers and the teacher. They mention that feedback on the learner's performance is crucial in defining the Zone of Proximal

Development (ZPD)<sup>1</sup>, in that the help is internalized and the responsibility for learning gradually shifts to the learner. This is what happens with the use of Personal Learning Environments (PLEs). PLEs are interesting environments that allow learners to discover their ZPD on their own (Tochon et al., 2014). According to Attwell (2007), personalized learning offers a real opportunity for learners to fully participate in their learning process and become co-producers and co-creators of knowledge. Becta (2008) uses the following key words and phrases to describe essential characteristics of personalizing learning: personal goal-setting inclusion; choice and preference; engagement and participation; responsiveness; flexibility; tailored and adaptable; and, enabling independence.

The principal philosophy of PLEs is the learner-centered approach since they are based on informal learning and constructivism and on social constructivism or "connectivism," (Siemens, 2005) in particular assigning the user the basic role of knowledge building, via the creation of communities and the creation, remixing and sharing of resources. Harasim (2012) sustains that the pedagogical models that support the principles of personalized learning is connectivism, pedagogy 2.0, and online collaborative learning pedagogy.

This paper supports that the creation of Personal Language Learning Environments should be with no doubt the best method for learning efficiently a foreign language. Extensive research has shown that Personal Learning Environments (PLE's) are learner-centric, providing relevant and timely learning opportunities by enabling individuals to select, integrate and construct knowledge using various software, services and options based on their needs and circumstance. In other words, learners are allowed to make decisions that best suit their goals and needs for acquisition of skills, knowledge creation, social interaction and collaboration (McLoughlin, 2013).

Bearing in mind the analysis made earlier, it is clear that language learners should make their own learning choices based on their language learning needs and objectives keeping though the teachers' and peers' valuable support. This idea is in line with the principle that is underpinning a PLE; that learners exercise greater ownership and control over their learning experiences, rather than being constrained by centralized, instructor-controlled learning based on delivery of pre-fabricated curriculum (McLoughlin, 2013).

<sup>1</sup> Vygotsky (1978) defined the ZPD as "the distance between the actual developmental levels as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers" (p. 86).

## 6. AN ADAPTIVE & PERSONALISED LANGUAGE LEARNING MOOC SYSTEM/ PLATFORM

### Connecting PLEs, Adaptive Learning and MOOCs in a Language Learning context

Based on the previous analysis, the creation of a personalized and adaptive language learning environment where language learners can form their own personal learning space using a combination of tools, applications and services that could support them during the learning process seems a very promising way of learning a foreign language.

The question that we need to explore is if MOOC technology can support personalized learning, and if yes, in which ways? From a pedagogical perspective and based on research findings MOOCs and especially the type of connectivist MOOCs can support personalized learning. MOOC can facilitate not only connection-forming and group-based learning but also the formation of individual, personal learning environments, or PLEs (Layton, 2013). It is also shown that cMOOC is based on the Personal Learning Environment (PLE) model while the xMOOCs are just an extension of the LMS (Keairns, 2013). In fact, recent research (Koutropoulos, 2013) makes clear that cMOOCs can bring together diverse platforms to enable learning through a common platform and through a learner's PLE. Furthermore, cMOOCs encourage active exploration on the part of the learner, sharing with other learners, generating knowledge, and reflecting on learning. These type of learner-controlled spaces often take the form of a Personal Learning Environment (PLE), and in such spaces learners choose their connections and sources of materials. In that case, learning happens when students interact with authentic materials, in learner-controlled spaces (Koutropoulos, 2013).

That means that cMOOCs provide, from a technological perspective, the appropriate technology that support self regulated and personalized learning. In other words, the platforms that are used for cMOOCs offer a variety of tools that could support this type of learning.

One of the aims of this research, that is still in progress, is to show that an adaptive learning system could better support Language Learning, even though the technology used for cMOOCs can support personalized learning in combination with collaborative learning.

According to the Chronicle of Higher Education (2013), MOOCs and adaptive learning software are often characterized as two of the most potentially game-changing technologies in higher education. It would seem natural to combine MOOC platforms, which accommodate thousands of students, with adaptive learning software, which responds to the needs of individual students (Kolowich, 2013). In fact, Feldstein believes that MOOCs and adaptive software form a "natural marriage" that "could help compensate for the absence of individual hand-holding in a massive course (Nielson, 2014). It is impossible to adequately staff the course with enough qualified facilitators when there are hundreds of thousands of enrollees. Adaptive media could be used together with the teachers' input and social media such as forums, social grading, and study groups (Nesterko, 2013). More concretely, adaptive learning systems can offer dynamic and interactive content, placing the student at the center of his or her individual learning experience. Adaptive learning technologies enable education to be personalized to the individual student. Computer-based tools are used to adapt learning paths to individual students based on learning needs. In other words, the course adjusts to the student (instead of the other way around, as is the norm) on a continual basis, based on data collected as the student moves through the program. Data can also be used to track and evaluate their experiences, and interventions can be targeted to students who are struggling. Furthermore, adaptive learning allows a better comprehension of material because students spend as much time as they need on topics (until they master them) before moving on (Austrade Insight Report, 2013).

Few positive results of introducing adaptive learning to MOOCs would be the reduction of the big dropout rate of participants, their higher engagement and of course the higher enrollment for adaptive MOOCs (Austrade Insight Report, 2013). Even though it is believed that an adaptive MOOC is complicated to be created (Kolowich, 2013) the first adaptive MOOC has been developed by Synaptic Global Learning in partnership with the Center for Innovation and Excellence in eLearning of the College of Advancing and Continued Studies, University of Massachusetts Boston. After many experiments and studies on the application of adaptive learning in personalized online learning, they have created the first adaptive MOOC (aMOOC) platform, providing a strong pedagogical framework and a personalized learning experience in a MOOC learning environment. This is a case of a MOOC that adapts to the learning preferences of individual learner using brain-based adaptive learning with learning strategies (apprentice, incidental, inductive, deductive and

discovery) and this process can lead to much higher completion. These learning strategies allow students to pursue the study of difficult subjects within the pedagogical environment that works best for them. The topic of this first aMOOC was related to the area of molecular dynamics for the computational discoveries in science and it was really successful in handling the large loads of the Massive Open Online Course and concurrent user stress. In fact, it is shown that the cloud architecture that was adopted by the system was necessary to accommodate expected large loads for a MOOC. One of the most important research results was that the pedagogy and technology developed for the adaptive MOOC could be a great promise for the future creation and conversion of the one-size-fits-all MOOC into effective adaptive MOOC (Sonwalkar, 2013).

One other effort of adaptive learning, that is connected to Language Learning, has been made by *Instreamia*. This is a language-learning platform that has sponsored last year a Spanish language MOOC with a big success. This platform uses exercises that adapt to users' needs as they go along (Nielson, 2014). More concretely, the system gives first a test to the learner in which an objective is offered and the learner is trying to understand native content. Then it identifies the strengths and weaknesses, and proposes the exercises according to the needs of every learner. It also offers the grammar principles that a learner needs for every objective through video. The system continually adapts to each learner's needs and helps solidify his/her understanding. Apart from the writing assignments that the system proposes to each learner the system automatically pairs every learner to a classmate so they can both practice the objective together. In the end, a quiz that is similar to the first test is assigned to every learner.

In the following paragraphs, will be presented a proposal of the design of an Adaptive & Personalized Language Learning MOOC System/Platform that is still under exploration.

### A proposal of an Adaptive & Personalized Language Learning MOOC system/ platform

In the previous phases of this ongoing research it has been conducted a) an exploration of the current state of Massive Open Online Language Courses (MOOLCs), b) a proposal of the Massive Open Online Interactive Language Learning Environment (MOILLE) framework that aims to help those who are interested in designing and evaluating an efficient Massive Open Online Language Learning MOOLC, d) A classification and

evaluation of every MOOLC based on MOILLE framework, e) Analysis of the most important issues related to the creation of MOOLCs and possible solutions, f) Proposal of some practical ideas for the creation of interactive platforms for successful MOOLCs.

In this phase of the research, we propose the idea of an Adaptive & Personalized Language Learning MOOC system/ platform (Fig.1, 2), taking under consideration the theoretical analysis presented in this paper, the MOILLE framework as well as a series of conclusions that were found during the previous stages of this research (Perifanou & Economides, 2014; Perifanou, 2014a, Perifanou, 2014b).

The diagram that follows (Fig.1) presents the first step of the process that all participants need to follow. That is a placement language test, a diagnostics quiz called "Pretest", that each participant will have to take. Based on the test's results an automated pattern-matching system's tool will identify the language level attained by each learner and will automatically enroll him/her in one of the three proposed courses (A1/A2, B1/B2, C1/C2).

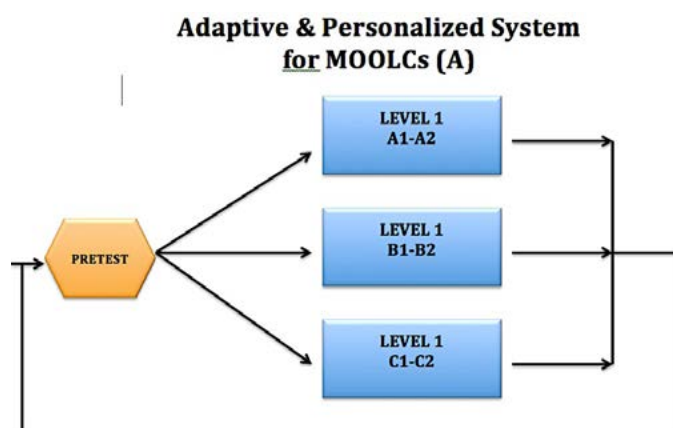


Fig.1 Adaptive & Personalized system for MOOLCs (A)

After the completion of the course, participants can repeat a "pretest" that will be different each time in order to check their language level again and following this the system will enroll them in a new language course (advanced or not).

Besides the "pretest" each participant will need to create a personal profile (answer a list of questions and choose the most suitable answer) providing a number of basic information about themselves like their learning objectives, their mother tongue, their preferable mode of learning (in collaboration, autonomous), collaborative tools that would prefer to use

during the course, their time zone and their time availability for synchronous or collaborative activities and topic of interests, etc. Then, an automated pattern-matching system's tool will propose/match either a self paced, and/or a peer to peer and/or group/s program of language learning, with complementary knowledge, skills and learning objectives or (Fig.2). Each participant will be able to choose between the proposed themes/topics proposed by the system and choose between the options of learning mode that he/she prefers each time.

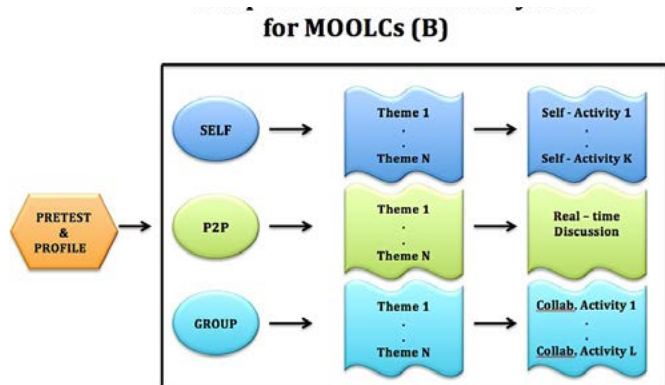


Fig.2 Adaptive & Personalized system for MOOLCs (B)

Teachers will also have to create their personal profile as well to provide personal information about their time availability, the level of lessons they want to teach, the activities they prefer to organize, etc. That means that based on teachers' profile the platform will automatically match teachers' profiles (based) to learning groups.

As far as the collaborative and peer to peer activities are concerned, the platform will also support language learners' authentic communication and collaboration with the provision of an "open status". That means that the system will be able to give information about the current status (online/offline) of learners and teachers (selected for each learner) and support in this way a synchronous communication, authentic interaction and feedback. The number of participants in a group will be limited to 10 learners in order to have most efficient language learning outcomes. The number of teachers for each course will vary depending on the availability of teachers. Teachers will also scaffold all self-regulated projects.

The learning material used will be authentic and mostly open source (OERs). It will be divided in specific themes/topics and each level will offer a big variety of activities depending on the mode of learning (self, peer, group) that each participant will

choose. All the individual, peer to peer and group activities will support the creation of learning objects like language and culture projects, Power Points, films, annotated interview videos on the themes being explored, etc. Game based activities will be also greatly promoted.

All the language learning activities will support not only language awareness (practice of all basic language skills) but also the development of several skills (cultural skills, social learning skills, higher order thinking skills etc.) and will also promote learners' motivation and their continuous engagement with continuous feedback (peer, teacher's, automated).

All the language activities including synchronous and asynchronous interaction will be facilitated by a variety of innovative tools and widgets that participant will be able to choose between, like: 1) Language specific tools & collaborative tools (Collaborative writing tools, translation vocabulary and dictionary widgets, spell checker, text to speech synthesizer, voice recorder and playback), 2) bookmarks/webpages (recommended websites, resources, exercises), 3) Quiz (online exercises tools) 4) Social networking (social networks and bookmarking), 5) communication (videoconferencing, chat, discussion forums), 6) Content creation (users blogs, wikis), 7) Media repositories (video, images, slides, sounds), 8) Multimedia players (podcasts, web radio, web tv), 8) RSS (Italian, English... newspapers and magazines feeds and blog feeds), 9) Miscellaneous Tools and widgets (to do list, calendar) etc.

As far as the assessment is concerned, as it was mentioned before there will be a multiple evaluation system (pre-ongoing-post). Apart from the "pretest", many tests will be used in order to help instructors to track what knowledge and skills participants gain as a result of their participation in the courses and how pedagogical strategies impact these outcomes. A continuous "feedback" on students' performance via testing activities will allow for iterative improvements in materials and activities. Besides that, peer assessment will be used and will be enhanced by relative social tools and the use of peer badging. The use of badges will be introduced in order to engage students and increase their motivation.

It is also worth mentioning that the platform will use analytic tools to support quality of MOOLCs through the analysis of specific factors (level of participation, type of participation, time of participation, number of questions etc.). The massive data sets that this platform will generate means that complex



patterns of MOOC participation can be examined, visualized, analyzed and discussed in detailed and very fruitful ways.

Furthermore, this platform will support the creation of Personal Learning Networks as each member of the MOOLC platform will be able to follow other users and connected using Friend and Friend of a Friend (FOAF) relations. The proposed MOOLC platform will have also a responsive design and will be accessible through different devices (tablets, smartphones etc.). In this way, language learners' and teachers' activities will be supported in the most efficient way.

It is believed that this type of a MOOC platform will be ideal for Language Learning because the learning environment becomes more personalized and tailored to the needs, abilities and interests of each participant despite the massive number of enrollees. At the same time, all language learners have the possibility to choose the mode of learning that they prefer, the tools that they want to use, the topics that they like, the time that best suits them to do language activities, interact with other peers and build their own network. In this way, it is hoped by the instructional designers that language learning will be accelerated, score results will be improved and generally all the learning goals of the participants will be fulfilled in the most productive, authentic, enjoyable and student centered way.

## 7. CONCLUSIONS

MOOCs promise to offer flexibility, affordable access and fast-track completion at a low cost for whoever is interested in learning (Yuan & Powel, 2014). Though, MOOCs have been criticized as a one-size-fits-all solution to a many-sided problem (Nielson, 2014). The reality is that MOOCs or one common type of MOOCs cannot be the "solution" for every educational need. The main aim of this research is to explore if it is possible to introduce MOOCs in order to learn efficiently a foreign language and how this can be done. More specifically, this paper has analyzed why learning a foreign language is not an easy process and why it is needed a detailed and careful course design, qualified teachers, a very good organization and a MOOC platform that provides all the necessary tools in order to acquire language learning skills in courses of a massive scale. It has also shown that adaptive learning could be incorporated into MOOCs to produce some of the most powerful language learning models we have seen so far.

To this end, it was made an attempt to propose an Adaptive & Personalized language learning MOOC system/ platform

that supports adaptive and personalized language learning and emphasizes the building of Personal Language Learning Environments which promote autonomy, creativity, social interaction and collaboration. The core educational idea that supports this system is a personalized way of language learning that takes place in an authentic and learner-centered environment with the language teacher's support as well as the support of the peers.

There are still many issues that need to be resolved in order to organize successful language MOOCs that will persuade teachers and researchers who sustain that MOOCs' format is especially problematic for the Language Education context. The research in this field is still in progress but the future of language MOOCs looks very promising. A next aim of our research is the development and implementation of the proposed Adaptive & Personalized Language Learning MOOC platform. We believe that this project will give us very important results that will contribute significantly to this research area.



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## Improved German Spelling Acquisition through Learning Analytics

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Many pupils struggle with the acquisition of the German orthography. In order to meet this struggle a web based platform for German speaking countries is currently developed. This platform aims to motivate pupils aged 8 to 12 to improve their writing and spelling competences. In this platform pupils can write texts in the form of blog entries concerning everyday events or special topics. Since the core of this platform consists of an intelligent dictionary focussing on different categories of misspellings, students can improve their own spelling skills by trying to correct their mistakes according to the feedback of the system. Teachers are informed about specific orthographic problems of a particular student by getting a qualitative analysis of the misspellings from this intelligent dictionary. The article focuses on the development of the intelligent dictionary, details concerning the requirements, the categorization and the used wordlist. Further, necessary information on German orthography, spelling competence in general and the platform itself is given. By implementing methods of learning analytics it is expected to gain deeper insight into the process of spelling acquisition and thus serves as a basis to develop better materials in the long run.

### Tags

German orthography, learning analytics, qualitative analysis of misspellings, categorization, Technology Enhanced Learning

### 1. Introduction

This article is concerned with a learning analytics approach in the field of German orthography. Due to the increasing internet usage in the field of education, the amount of data that is produced is rising daily. This data is shared between various kinds of institutions around the globe (Piety, 2013). Furthermore, the heavy use of the Internet generates enormous data about learners' behavior and leaves traces of every interaction (Duval, 2010). Thus, interaction between students and a learning platform can be captured and used for later analysis in order to gain an insight into a learners' learning process (Khalil & Ebner, 2015). This can then be used for early detection of learning issues and enables teachers to actively intervene accordingly in order to solve such issues effectively (Siemens et al., 2011; Greller & Drachsler, 2012).

German orthography is known to be quite difficult to master. People from different social classes, of different ages and with varying degrees of education, struggle with spelling words correctly. However, the importance of correct spelling for social acceptance is quite high. It affects primary-school pupils' as well as a university students' everyday life inside and outside

schooling. Still, instructions in German orthography are often unsystematic and not particularly attractive for children.

The development of the IDERBLOG-Platform<sup>1</sup> aims to solve such problems by combining technology enhanced learning and learning analytics with the acquisition of German orthography (Ebner et al., 2015a). The platform should serve as an attractive and motivating innovation for children to acquire German orthography appropriately and more easily. It has also advantages for teachers and researchers, as the application of learning analytics supports them in their decision making process by providing them with an overview of possible educational interventions (Ebner et al., 2015b).

## Outline

The next section gives a short overview of the German orthography as well as orthographic competence and learning analytics. The following section is concerned with the development of the information system of the platform, its interface design process and the planned workflow. The two succeeding sections focus on to the intelligent dictionary and the feedback system. The article aims to give an overview of the categories, the requirements and the process of categorization of the intelligent dictionary.

## 2. Related work

### German Orthography

German orthography uses an alphabetic writing system. Alphabetic writing systems are characterised by mirroring the phonemic structure of the spoken language to the written language, which leads to the assumption that words are spelled as they sound (cf. Katz & Frost, 1992, p. 149).

This phonological principle is applied to a varying degree of consistency in different languages. It leads to a continuum of orthographies ranging from transparent to opaque ones with a huge impact on spelling instruction and acquisition. In transparent orthographies like Serbian, Turkish or Italian each phoneme (notated consecutively with / /) is represented by one letter – or more precisely – grapheme (notated consecutively with <>). Therefore, the assumption to spell a word as it is heard is quite true in these orthographies. In opaque orthographies like English or French “there is a pronounced discrepancy

between pronunciation and orthography” (Klees, 1989, p. 137). Consequently, learners are confronted with unreliable correspondences since – in the case of English for example – “the alphabet contains just 26 letters yet these correspond to 44 phonemes associated with 102 functional spelling units.” (Snowling, 1989, p. 1). The German orthography can be found in the middle between transparent and opaque orthographies. Following Nerius (2007) it consists of two basic principles, the phonological and the semantic principle. Part of the phonological principle are the phoneme-grapheme-correspondences (PGC), which are mostly not in a 1:1 relationship, e.g. /a:/ can be <a> in <Wal> *whale*, <aa> in <Saal> *hall* or <ah> in <kahl> *bald* (cf. Meinhold & Stock, 2007, p. 122). Part of the semantic principle is, according to Nerius (2007, p. 89 ff), the morphological principle – among the lexical, the syntactic and the textual one. This principle is responsible for spelling one morpheme in the same way in all words in which it occurs. This often leads to a conflict with the phoneme-grapheme-correspondences: e.g. spelling the word *dog*, in German pronounced as /hunt/, following the PGC would lead to the misspelling (usually indicated with an asterisk) <\*Hunt>. It has to be spelled <Hund> because of the plural form /hundə/ *dogs*. The spelling <Hund> with a <d> is kept the same in all words, like <Hündin> *female dog* or <Hundeschlitten> *dog sled*. The spelling of the orthographically challenging ‘Umlaut’ (= vowel mutation spelled as ä/äu) in morphologically complex words is also due to the morphological principle (e.g. <Hände> *hands*, not <\*Hende>).

These principles and their value for German orthography highly affect the didactic approach of teaching – especially in higher classes and additional trainings. In general, the spelling instruction at the beginning of literacy acquisition is clearly phoneme based (cf. Landerl & Thaler, 2006). This is the reason why children are able to write (new) words relying on their knowledge of pronunciation soon after getting to know the PGC. Words written in this way can also be read, but they are often not orthographically correct (e.g. <\*falip> for <verliebt> in love). Especially for children who are not speaking the standard German variety, the influence of the spoken language is evident in their spelling. Due to other sub-principles of the semantic basic principle further orthographic challenges are – for example:

- Nouns must be spelled with capital letters – a feature that can only be found in the German orthography (cf. Valtin, 1989, p. 119). It leads to many mistakes – even in texts of well-educated adults.

<sup>1</sup> IDERBLOG-Platform, available online: <http://iderblog.eu/> (German language only, last visited October 9, 2015)



- Homophone words are sometimes, but not always, spelled differently (e.g. /li:t/ as <Lied> song or <Lid> eyelid, but /notə/ as <Note> for mark and note) (cf. Nerius, 2007, 167).
- Compounds are usually spelled compound (e.g. <Teetasse> tea cup). Depending on the meaning of a combination of words, it must be spelled separately or compound (e.g. <Schweinebraten> roast pork or <Schweine braten> – to fry pork) (cf. Fuhrhop, 2011, p. 107).

### Spelling Competence

Especially in the German speaking world correct spelling is considered very prestigious, but students consider spelling instructions often as boring and formal (cf. Küttel, 2007, p. 418f). Additionally, teachers often do not pay attention to the systematic principles that stand behind the spelling of certain words. This often leads to the assumption, that it is not possible to teach German orthography systematically (cf. Fröhler, 2002). In contrast to other areas of language learning, there is hardly space to argue about the correct or incorrect spelling of a word. This orthographical stiffness can probably serve as an explanation for its importance.

It is important to understand that the spelling competence of a person does not only include the knowledge of the correct spelling of a given word and knowing the rules of orthography. It also includes being sensitive to misspelled words, knowing how to correct them, using spelling aids and applying strategies (cf. Sommer Stumpfenhorst, 2012; Naumann, 2008). Concerning instruction, it is not enough to simply offer different online or offline exercises. “Children or student’s need purposeful reading and writing in a broad range of situations, in an environment that values risk-taking. They will develop spelling competence as they implement their knowledge of the spelling system, receive feedback and refine their hypotheses.” (Government of South Australia, 2011, p. 6). Furthermore, children should be encouraged to think about and reflect language in order to become aware of the structure of words (cf. e.g. Tsesmeli & Seymour, 2006). Due to the different principles of German Orthography, metalinguistic awareness must be established beyond phonological awareness (cf. e.g. Naumann, 2008). For example, children must be encouraged to see the morphological link between singular and plural form (e.g. <Hälsa> because of <Hals> *necks*, <Rind> because of <Rinder> *cows*).

### Learning Analytics

The field of Learning Analytics tries to consider the learning process as a whole in its full complexity. According to Baker et al. (2012) and Neuhold (2013) it is important to keep feedback and its visual representation as simple as possible to avoid confusion and unreasonable interpretation on the side of the stakeholders. Campbell et al. (2007) provide a model for the analysis process in five steps: capture, report, predict, act and refine. Clow (2012) used these five steps as a basis for his learning analytics cycle. This iterative process consists of four main components: learners, data, metrics/analytics and intervention (Clow, 2012). To get an overview about the whole process Khalil & Ebner (2015) added stakeholders to the cycle. Nevertheless, the main idea of Learning Analytics is to provide and process a learners’ data in an appropriate way in order to facilitate teachers to react and (if necessary) to intervene. For instance, Taraghi et al. (2015a) introduced an analytical approach to model a learner’s profile according to their answering behavior. Moreover, the analysis of different error types can lead to findings that help to enhance the learning process as a whole (Taraghi et al., 2015b).

### 3. Information system

The platform (information system) for the project is currently under development and yet not available for public presentation. Nevertheless, this section will provide basic design ideas to ensure good age-appropriate interface design and usability (Ebner et al., 2015a). In the second section the planned workflow of the analysis will be outlined.

### Writing by using the Computer

Since developing writing skills and acquiring orthographic competence is important and writing with computers is attractive for children, the IDERBLOG-Platform combines these components. The aim is not to replace handwriting by typing on keyboards, but to take advantage of the digital age. “For some people with major handwriting problems, personal computers are a boon.” (Høien & Lundberg, 2000, p. 68)

A further advantage of writing on a computer is, to train the ability to correct texts. Since corrections are made within a digital text, corrections do not leave traces in contrast to a handwritten text. Consequently, a text can be edited several times until it becomes publishable. Furthermore, the IDERBLOG-Platform is “providing relevant reasons and audiences for writing”

(Government of South Australia, 2011, p. 8) as children can publish their texts. Therefore, it is expected that the motivation to formulate a text and to revise it several times is possibly higher in contrast to typical essay writing in a classroom where the addressee is almost only the teacher.

Concerning the training of orthographic skills, the IDERBLOG-Platform offers an intelligent dictionary, which does not only count the number of mistakes in a text, but also categorizes the mistakes in different orthographic areas. In contrast to the work of Thelen (2010), that analyses misspellings in German orthography, we do not only focus on beginning spellers but also on more advanced learners. One of the most important features of the intelligent dictionary is that it offers feedback and hints for the correction of a mistake. Additionally, the platform offers a number of exercises that are connected and categorised according to spelling mistakes and therefore meet the need of practice in a specific area of spelling.

## Interface Design

The platform is generally designed for children the primary school (age 8 to 12) with the focus on a graphically appealing and age-appropriate web interface (Liebal et al., 2011). For this purpose, a graphic designer created drafts that have been examined and rated by students from different schools. The designs that were favoured by the majority were then, in a second step, developed further and afterwards integrated into the platform.

Another important part of the platform is usability. We had to ensure that the students can reach the most important parts of the platform in less than five clicks. This convenient accessibility in combination with attractive figures should ensure high motivation in fulfilling the task of writing texts. In ongoing usability tests (Holzinger et al., 2005) we continue to improve the concept step by step.

## Workflow of the Platform

The students, as shown in Figure 1, can write their texts on the provided platform. First the text will be analysed orthographically by the intelligent dictionary (which will be described in the next section). Proper feedback will be provided to the student, based on error type and category. The student has the choice to either try to correct the wrong words or to hand-in the text directly to the teacher. This intermediate step encourages the

expertise of independent correction (Bartnitzky et al., 2010). After the submission, the teacher should inspect the text for further corrections and/or improvements. Notes can be made and delivered with the final correction to the student. After this step the text can be published in the class blog of the school (if appropriate).

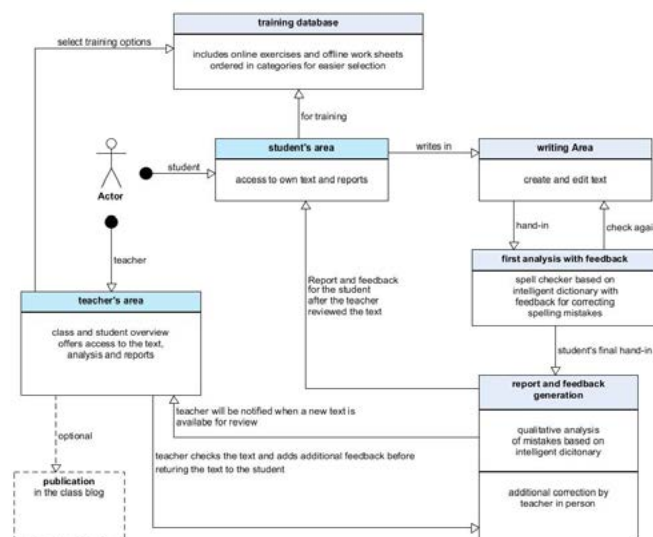


Figure 1: Workflow of the platform

The methods of learning analytics will be used for further analysis of the texts (Siemens, 2012). The results will be provided to students, teachers and parents in an appropriate way. Further, an overview of the frequency of mistakes and possible systematically made errors is offered. In the long run changes in a students' performance will be measured (Schön et al., 2012).

## Training database

The platform will include an additional training database, as shown in Figure 1, with selected online exercises and offline work sheets. This database will aid teachers and students to find appropriate exercises to improve the performance in problematic areas (as a consequence of the learning analytics analyses). The exercises and work sheets are congruently ordered in categories and sub-categories for easier selection.

## 4. The intelligent dictionary

### Categorization of mistakes

A word can be either orthographically right – in case the spelling of a given word exists in a list of correctly spelled word, called

dictionary, or wrong – in case it does not exist. In science, mistakes are analyzed in different categories depending on the purpose of the study: e.g. for the English language Broc et al. (2013) categorise spelling errors of people with specific language impairments in phonologically acceptable vs. unacceptable. Flor & Futagi (2012) focus on non-word misspellings in the context of spell checker. In school often a quantitative approach is applied, which means counting the number of misspelled words. In addition to the correct-wrong dichotomy there are some other ways in the categorisation of incorrectly spelled words that lead to a greater insight into the orthographic competence.

One way is to count the number of correctly written graphemes of a given word: This helps to analyse the progress of extremely weak or very young spellers (cf. May, 2010). For example, the spelling for /V/e/r/k/äu/f/e/r seller in \*F/e/r/k/äu/f/a contains only 4 out of 8 correct graphemes in contrast to \*/V/e/r/k/äu/f/e/r with 7 out of 8 correct graphemes. Although both writing attempts are wrong, the second one is much better. This grapheme-based approach is a rather detailed and time consuming way of correcting. Therefore, it is generally only applied in a standardized spelling test called “Hamburger Schreibprobe” (May, 2010) which provides pre-defined templates for the quite small amount of words used in the test.

Another way of categorizing incorrectly spelled words is to define the type of mistake(s) and to collect the various frequencies for the given categories in order to identify the orthographic areas that need to be worked on (cf. e.g. Naumann, 2008, p. 139; Thomé & Thomé, 2014). The determination and the assessment of these categories vary and are highly depending on the purpose. The applied systems range from unpublished templates developed by teachers to published and buyable ones. For example, scientifically based and evaluated templates for texts can be found in the “Oldenburger Fehleranalyse” (OLFA) (Thomé & Thomé, 2014) and those specifically meant for the qualitative analysis of standardized tests can be found in the “Aachener Förderdiagnostische Rechtschreibfehleranalyse” (AFRA) (Herné & Naumann, 2002). When using the OLFA (Thomé & Thomé 2014) the teacher has to collect texts containing a certain amount of mistakes. Each mistake of a word has to be analysed and categorized in one of the 35 categories (e.g. lower case letter instead of upper case letter, upper case letter instead of lower case letter, omission of a vowel, addition of a vowel, etc.) that are described in detail in an accompanying manual. Since the different categories are related to the stages

of spelling development the teacher gets to know the level of spelling competence of a student.

In all described cases above, the time consuming analysis of misspellings must be done by the teacher personally. This requires effort to get familiar with the theory of German orthography and the (applied) way of analysing the mistakes. From our experiences, a detailed analysis is made only by highly specialised people in rare cases. Since a clear qualitative analysis of misspellings is the basis for a good and target oriented intervention, the IDERBLOG-Project aims to conduct the analysis in large part automatically in order to support teachers and consequently foster the spelling acquisition process for children.

### Requirements for analysis

The categories of the qualitative analysis for the intelligent dictionary need to fulfil some requirements on scientific, technical and practical basis. In order to fulfil all these requirements, the system of categories is established on different hierarchical levels from fine to coarse grained. This has the advantage, that the system stays flexible as each level is mainly dedicated to a specific purpose. We had to take into account that many different words belong to one category of mistakes. In order to provide a detailed analysis, we split a category into specific phenomena (see table 1). Based on those we have a proper fine-grained level for the application of learning analytics. However, those phenomena on such a detailed level are not suitable for a general feedback. Therefore, the phenomena of this specific level are merged in order to retrieve a qualitative analysis for the teacher with a manageable amount of categories and in order to be linked to the database containing appropriate orthographic exercises. It also needs to be taken into account that the naming of the categories that are visible for the teachers and/or children, are scientifically correct but still easy to understand and consistent with the established terms used in school environment, which are not always consistent with the scientific terminology.

### Method

In order to establish the different categories, a literature survey was conducted and well-known approaches for qualitative analysis for misspellings within the German orthography were evaluated (cf. Edtstadler, in press). At the same time, 55 short texts of 3rd grade students from Germany and a limited

number of longer texts of 5th and 7th graders from Austria were collected. In a next step a draft of categories was developed based on the findings of our research of relevant literature as well as by using, as a starting point, established categories of existing analysis methods such as OLFA and AFRA. This draft was rearranged, modified and extended in order to meet the requirements of the intelligent dictionary. It was especially challenging to construct the categories in a way that the description of the phenomena fits in with the possibilities of programming misspellings as well as with the categories for the teachers and the database with the exercises. Additionally, specific misspellings due to the existence of different German varieties are considered.

The usability and suitability of the draft's categories were further checked by assigning one mistake encountered in the above mentioned texts from different regions of the German speaking area to a phenomenon, for which a feedback can be given. Also, phenomena of mistakes that were not found in the quite small amount of texts' (mentioned above), but are theoretically possible and/or by experience encountered in students' texts were added: For example, in the texts an inflected form shows that the 'Umlaut' is substituted by <e> (<\*fengt> he/she/it catches instead of <fängt> because of <fangen> to catch),

therefore, the substitution in plural forms (<Apfel - Äpfel> apple - apples), derivations (<Glanz – glänzend> shine - shiny), and comparisons (<warm - wärmer> warm -warmer) were also added.

## General Description of the Categories

The categories are established on a linguistic and orthographic basis, also by regarding previous findings of the theory of German Orthography (e.g. Nerius, 2007). Consequently, the system (see table 1) is divided in two parts: On the one hand, the system contains the parts that are invisible for the user where the scientific and theoretical basis can be found. This is necessary for the description of the phenomena and consequently for programming the possibly misspelled words. The visible parts, on the other hand, appear in the qualitative analysis for the teacher, serve for the selection of exercises from the training database and appear in the feedback the writer gets in case a word is not spelled correctly.

Since this system is quite complex, the described system is shown in table 1. The orthographic area of 'Umlaut' serves as an example.

Linguistic level (not visible)	Ortho-graphic area (not visible)	description/ rule based phenomenon (not visible)	Category for the teacher (visible)	Category of spelling exercise (visible)	Sub-category of spelling exercise (visible)	Example of a misspelled word	Feedback for the writer
Morpho-logical level	Um-laut	Inflection of nouns: e/eu for ä/äu	Umlaut derivable	Morpho-logical hints	Derivation	apples: not <*Epfel> but <Äpfel> because of <Apfel> apple	Think, if there exists a base form with a.
Morpho-logical level	Um-laut	Inflection of verbs: e/eu for ä/äu	Umlaut derivable	Morpho-logical hints	Derivation	he/she/it catches er/sie/es not <*fengt> but <fängt> because of <fang-en> to catch	Think, if there exists a base form with a.
Morpho-logical level	Um-laut	Comparison of adjectives: e/eu for ä/äu	Umlaut derivable	Morpho-logical hints	Derivation	warmer: not <*wermer> but <wärmer> because of <warm> warm	Think, if there exists a base form with a.
Morpho-logical level	Um-laut	Word formation / derivation: e/ eu for ä/äu	Umlaut derivable	Morpho-logical hints	Derivation	shiny: not <*glenzend> but <glänzend> because of <Glanz> shine	Think, if there exists a base form with a.

Table 1: Example of the system of the intelligent dictionary in the orthographic area of 'Umlaut'

Starting from four linguistic levels – phonological, morphological, lexical and syntactic – the categories are further divided into orthographic areas. The phonological, the lexical and the syntactic level consist of three orthographic areas. The morphological level that is used for giving insight to the complex system (cf. partly Nerius, 2007, p. 158ff) contains five orthographic areas, including ‘Umlaut’ (see table 1), which are essential for spelling words correctly:

1. Morpheme constancy: lexical and grammatical morphemes are spelled the same way in compounding, derivation and inflection, even when the sound cannot be heard (e.g., <Ohrring> earring, <Weihnachten> Christmas because of <weihen> hallow, <stehen> not <\*stehn> because of the suffix –en, <Verkäufer> seller because of the prefix ver-).
2. Morphological hints for using capital letters: the use of capital letters for nouns is quite difficult and depending on the syntax, but because of certain suffixes, derivations can easily be identified as nouns that must be written with capital letters, e.g. <\*belohnung> gratification because of the suffix –ung.
3. Morphological hints for not using capital letters: there are also some suffixes that indicate that a given word is not written with a capital letter, although morpho-syntax can change the word class, e.g. <\*Furchtbar> horrible is correctly spelled <furchtbar> because of the suffix –bar, but it is spelled with capital letters in the phrase <etwas Furchtbares> something horrible whereas the use of the same word form as an adjective requires the use of lower case, e.g. <ein furchtbares Gewitter> a horrible thunderstorm.
4. ‘Umlaut’: Because of phoneme-grapheme correspondences, especially in the area of Austria, the ‘Umlaut’ is often incorrectly written as <e>, e.g. <\*glenzend> instead of <glänzend> shiny, since the ‘Umlaut’ needs to be applied because of the base morpheme <Glanz> shine (for details, see table 1).
5. Terminal devoicing: In German a word is pronounced with a devoiced obstruent at the end of the word, but spelled with the voiced variant of the phoneme-grapheme correspondences (e.g. /hunt/, but spelled as <Hund> dog because of the wordform /hunde/ whereas <Brot> bread is spelled as <Brot> because of /bro:t – bro:tə/).

Each orthographic area is associated with a wide range of phenomena. These phenomena are formed in a way that they can function as a rule for programming the possible mistakes (see table 1). The number of phenomena is depending on the given orthographic area and can be expanded and reduced, based on evidence. The following example will help to show the variety in the number and the characteristics of phenomena: In the orthographic area of morpheme constancy the category derivational suffixes (for the analysis for the teacher) summarises the phenomenon of misspelling suffixes such as –ig (e.g. <lustig> funny) (written in different ways depending on the spoken German variety as –ich <\*lustich>, –isch <\*lustisch>, –ik <\*lustik>), and the phenomenon of spelling the suffix –lich as <\*-lig> as well as further phenomena describing the misspelling of other derivational suffixes.

As mentioned above, it is important to work with a manageable amount of categories when offering the qualitative analysis for the teacher. Therefore, the currently 110 phenomena are linked with 34 categories of the qualitative analysis for the teacher. In the example in table 1, the four defined phenomena for misspelling the ‘Umlaut’ are summed up in one category that tells the teacher that within a certain amount of mistakes the ‘Umlaut’ was derivable, but incorrectly spelled with the wrong grapheme.

The categories of the qualitative analysis are then connected with and/or mirrored in the labels of the orthographic exercises available on the platform. For an easier orientation they are divided in categories and sub-categories of exercises. However, the labelling of the exercises is in some cases more coarsely grained than the category of the qualitative analysis itself (e.g. the category upper case instead of lower case and the category lower case instead of upper case are labelled as upper and lower case exercises, since a lot of exercises practice both at the same time). This is due to the fact, that in the first step only already existing exercises are available on the platform, but in the progress of the project specific exercises will be developed.

The phenomena also function as the starting point for the feedback of the intelligent dictionary, which will be described more in detail below.

## 5. Feedback from the Intelligent Dictionary

All of the categories and phenomena form the basis for the analysis and application of the intelligent dictionary, which is the core of the platform. The idea is that a child, who misspells



a word, does not only get the feedback that the word is spelled incorrectly, but also gets a hint for correcting it. The given feedback is connected with the phenomenon. In order to keep a straightforward number of feedbacks the same feedback will be given – whenever possible - for more than one phenomenon within an orthographic area. It is formulated in a way that forces the child to think about the spelling and further encourages the development and application of spelling strategies. Therefore, no direct commands (e.g. “use <ä> instead of <e>”) for correcting the word are included in the feedbacks. The correction will only be successful if the child reflects on the hint in combination with the misspelled word. This approach stands in contrast to the usual word-correction process where either the misspelled word is marked or the correct word needs to be selected from a variety of offered words. In both cases the correction will probably not lead to a deeper understanding of correct orthography.

Klicpera et al. (2003, p. 255) mention that in order to acquire correct spelling, it is important to offer exercises that allow the autonomous correction in a motivating context. Experienced teachers and trainers for dyslexic children know that poor spellers have problems in identifying their mistakes in a text. But as soon as a hint for correcting the word is given, they often know how to spell it correctly. This is a successful, but a time and energy consuming way of improving orthographic competence. In order to avoid exhaustion, the intelligent dictionary gives this feedback instead of a teacher, which also has the advantage that the intelligent dictionary can and will repeat the feedback several times. In case a child spells <\*Epfel> instead of <\*Äpfel> apples the intelligent dictionary provides the feedback “Think if there exists a base form with “a”?”, the same feedback will be given in case the child writes <\*fengt> instead of <fängt> to catch or <\*glenzend> instead of <glänzend> shiny. There is no strict application of a syntactic pattern for the feedback since the wording of the feedback is chosen rather on a didactic than on a formal basis.

### Wordlist of the intelligent dictionary

Since this intelligent dictionary so far, is designated to function as a first prototype, only a selection of words functions as the basis for programming the dictionary. For the first prototype we had to choose around 1000 words. Generally such a selection of words would be based on the frequency of the CELEX (1995) database – although this would propose some problems (cf. Brysbaert et al., 2011). Selecting words only based

on frequency in general without considering the frequency of words in children’s language is especially problematic for the development of an application aimed at children. Also the fact that the selected words should be prone to be misspelled had to be considered (for a discussion see Risel, 2008).

In order to meet these requirements, the word list for the prototype of the intelligent dictionary is based on the basic vocabulary of three German Federal States (Bavaria, Hamburg, Berlin-Brandenburg). In the next step it was checked, whether in these basic vocabularies the 100 most frequently misspelled words of 4th graders (compiled and made available by Tacke, 2008) are included. Words that do not appear in any form in one of these three basic vocabularies were included (e.g. <kommt> comes was not included since <kommen> to come is a word of the basic vocabulary, but <ziemlich> quite was included since it does not appear in one of the basic vocabularies). At the end, the word list for the prototype of the intelligent dictionary ended up containing around 1100 words.

Since German has a rich morphology and texts are not merely made of words that are listed in a dictionary, it is necessary to list all the possible word forms of a given word in order to construct all possible misspellings for the intelligent dictionary in a next step. The collection of all possible word forms of a given word (or to be precise of a lemma) is based on the CELEX (1995) database. This incorporation of all word forms enlarged the wordlist to over 7500 orthographically correct words. In German the variation in the number of word forms for a given lemma is quite high as is proven by the following examples:

- For the adjective <ähnlich> similar the CELEX (1995) database has 17 word forms (<ähnlich, ähnliche, ähnlichen, ähnlicher, ähnlichem, ähnliches, ähnlichst, ähnlichste, ähnlichsten, ähnlichster, ähnlichstem, ähnlichstes, ähnlicherer, ähnlicheren, ähnlicherer, ähnlicherem, ähnlicheres>) including inflection for singular, plural, the different cases and comparison.
- For the regular verb <arbeiten> to work 10 word forms can be found in the CELEX (1995) database in summary, whereas for the irregular verb <beginnen> to begin exactly 24.
- For the noun <Beispiel> *example* exist only four word forms.
- For prepositions no other word form can be found since they cannot be modified.

For these 7500 word forms of this wordlist all possible mistakes for a given category are constructed and connected with the feedback. For instance, for the orthographic area of 'Umlaut' all words containing an <ä> in the wordlist must be searched for. To consider the different phenomena where substituting <ä> for <e> is a mistake due to the morphological principle, the search is done separately for verbs (e.g. <\*fengt> instead of <fängt> he/she/it catches), nouns (e.g. <Epfel> instead of <Äpfel> apples), adjectives (e.g. <\*kelter> instead of <kälter> colder) and derivations (e.g. <glenzend> instead of <glänzend> shiny). But, since the 'Umlaut' in the word <ähnlich> and its substitution with the incorrect <e> does not qualify for the morphological level it must not be included in this category but has to be added in another appropriate category with according feedback.

## 6. Conclusion

In this article we introduced a platform that aims to motivate children to improve their spelling skills by writing and publishing texts. In this platform an intelligent dictionary is integrated and based on the presented system of categories, the intelligent dictionary gives feedback in order to enable children to correct mistakes with the help of this feedback. The platform also provides a qualitative analysis for teachers, who can use the results in order to help pupils with the improvement of word spelling. Concerning learning analytics, the occurred misspellings can also be used for an in depth analysis.

The development of the platform and the intelligent dictionary is still under construction and changes are still possible. There are still issues such as the identification of several mistakes in one word that will most certainly lead to further discussion in the future. However, we are positive that this combination and the interdisciplinary work of the IDERBLOG-Project will in future motivate more children from grade 3 on to write texts and to improve their spelling competence. Further, we can support teachers by providing analysis and material for the improvement of spelling. The active application of the methods of learning analytics in this area of language learning will help us to understand the process of spelling acquisition in more detail. It is expected that this unique combination in one platform has a positive impact on didactic approaches, education and science.

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## A Spanish Inverted Classroom: Students' Perceptions and Implications for Teachers

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This paper assesses the technical, aesthetic and educational quality of the educational materials created in a Spanish inverted classroom and identifies key elements to successfully design an inverted classroom. The results can help teachers interested in this methodology to select the necessary tools to create high-quality digital educational materials as well as to understand the technical skills necessary to develop them. Using an evaluation research design, this study followed the impact of the Inverted Classroom Model on a group of students. Participants appreciated the technical, aesthetic and educational quality of the course materials and found that they could not only participate in the course more actively, but also acquire a regular and productive working routine. The results indicate that foreign language teachers have to adopt a new and more complex role in the 21st century classroom.

### Tags

Keywords: Inverted Classroom; Flipped Classroom; Flipped Teaching; Instructional Design; Blended Learning

### 1. Introduction

The Inverted Classroom Model is a blended learning modality in which teacher lectures are replaced by educational videos or online presentations outside the classroom, dedicating the in-class time to active learning activities such as group discussions, case studies, collaborative learning, problem-based learning, and inquiry-based learning. Since this methodology reverses the traditional model, consisting of classroom lectures followed by homework at home, it is called Inverted Classroom (Handke 180; Handke and Schäfer; Lage, Platt, and Treglia; Strayer) or Flipped Classroom (Bergmann and Sams, *Flip Your Classroom* n.p.; Berret n.p.; Bishop and Verleger 67; EDUCAUSE Learning Initiative n.p.; Hung 81; Khan et al. n.p.; Muldrow 28).

The theoretical foundations that motivate the development of the inverted classroom are based on new insights from the field of cognitive psychology into how students learn, which suggest that teachers can no longer simply provide students with information and hope that they understand it (Berret, n.p.). Thus, within an inverted learning environment, educators seek to make the best use of the in-class time, moving away from being the centre of attention in the classroom towards a scenario where that attention is passed onto the learners (Bergmann and Sams, *The Flipped Classroom* n.p.). The principles underpinning the design of face-to-face activities in an inverted classroom approach are built around the active learning model. Active learning is broadly defined as “any instructional method that engages students in the learning process” (Bishop and Verleger n.p.). It is an umbrella term that accommodates a vast range of learning activities, instructional strategies, teaching methods and learning pedagogies such as group discussions, case studies, Collaborative Learning, Problem-Based Learning, Inquiry-Based Learning, Universal Design for Learning, Cooperative

Learning, Peer-Assisted Learning and Peer Tutoring (Bergman and Sams, *The Flipped Classroom* n.p.; Bishop and Verleger n.p.; Hung 82). These in turn focus on the theories of Piaget 1967 and Vygotsky 1978 (Bishop and Verleger n.p.). Adapted to the field of language instruction, the in-class activities conducted in this study were based on the principles of Task-Based Language Teaching and Learning, a methodology which encourages language acquisition through communicating in the language rather than through direct instruction of its rules and vocabulary (Ellis 31).

The first testimony of this methodology was reported by Lage, Platt and Treglia in 2000. They replaced the presentations in their Economics course with video recordings which students had to watch before class. In a secondary education context, the pioneers are Jonathan Bergman and Aaron Sams, two Physics teachers in a small town in the USA. They wanted to facilitate access to their explanations to pupils who, for different reasons, could not attend class regularly. Bergman and Sams found an interesting piece of information about a computer program that allowed users to record Power Point presentations with the addition of voice and they started to develop their model, which they have presented in different schools in the USA.

It is important to point out two aspects of this methodology. Firstly, the emphasis does not lie on the digitalized presentations but on the new dimension the in-class session acquires: it becomes a learner-centred, more active class containing activities designed for that goal (Berret n.p.; Hung 81, 92; Khan et al. n.p.; Loviscach 4; Talbert 1). This is the genuinely differentiating element of the Inverted Classroom Model.

Secondly, the ease of access to technology has been key in developing this methodology (Berret n.p.; Strayer 182). Indeed, teachers have been inverting their classes for decades through reading assignments or pre-class homework, but all authors who have researched the Inverted Classroom Model have integrated technology into their courses more or less intensively. Khan et al. (n.p.) have created a matrix that displays different intensity grades of technology use in the Inverted Classroom Model. The range of activities varies from a total absence of technology to the use of screencasting software and multimedia presentations.

However, the use of video to replace teacher presentations constitutes a controversial topic. Handke (83) and Talbert (1) consider video as the most efficient instrument to convey course content. Bishop and Verleger (67) go further and reject any definition of flipped classroom which does not include

the use of videos as a component. The authors justify their definition based on two premises: firstly, they argue that the use of a definition which is too flexible makes it impossible to evaluate the effectiveness of this methodology. Also, they base their arguments on evidence which shows that students tend not to complete assigned readings. Even though this statement might be true, it is also true that there is currently no evidence that indicates that students watch entire videos.

### *Foreign Language Instruction and the Inverted Classroom Model*

The Inverted Classroom is applied primarily in secondary education (Hung 83). Several educators have written reports on the web about their experience with this methodology. Nonetheless, and according to Bishop and Verleger (n.p.), the number of studies that examine its efficiency is rather low. In 2013 these authors conducted a study on the investigations published in this field to date. Out of 22 studies, one was conducted in a secondary school and was followed by the book by Bergmann and Sams. The other researched disciplines were distributed as follows: 17 from the STEM disciplines, three from Economic Sciences, one from Social Sciences and one which does not focus on any discipline. The article by Hung (81-96) which appeared after the publication of Bishop's and Verleger's study must be added to this list.

Hung implements a post-test-only quasi-experimental design to examine the impacts of flip teaching on students' learning performance and on their attitude towards an English as a Foreign Language course. In this study, the online phase consisted of the realization of WebQuests. The author acknowledges the lack of rigorous research on this methodology in the field of language instruction (83) and identifies as a plausible reason for this the fact that, within humanities, inductive methods have traditionally been used to acquire and construct knowledge, rather than teacher-centred lectures. Berret (n.p.) agrees with her and notes that STEM disciplines are particularly prone to adopting this methodology because they use a very didactic teaching, whose primary goal is to disseminate knowledge.

Hung's study represents the first empirical study on the effects of the Inverted Classroom Model in a foreign language course. Weidmann (155–172) describes the necessary steps to implement this model in an English course in a secondary school, but the results of his study had not been published when this article was written.

The present study contributes to the literature in the field of technology and language instruction because it gathers for the first time students' opinions about the technical, aesthetic and didactic quality of the educational materials used in a Spanish language course based on the Inverted Classroom Model. The data presented here can help teachers who are interested in this methodology to select the necessary tools to create online educational materials as well as to understand which technical skills are necessary to create them.

One of the most mentioned drawbacks to the implementation of the Inverted Classroom Model is the investment of time and effort needed to create the material, particularly educational videos (EDUCAUSE Learning Initiative n.p.; Talbert 2). This study thus aims to determine which skills are necessary to create online materials as well as to outline the elements that contribute to a sound design of this methodology by exploring the students' perceptions of the educational materials as well as their attitudes toward their learning experiences in the inverted classroom. The students' degree of demand regarding the technical, aesthetic and didactic value of digital educational materials is a valid measure of quality, because they are digital natives<sup>1</sup> and therefore used to communicating and working with digital tools.

The research questions that guided this study are grouped into two categories: the students' opinions about the quality of the digital materials and their acceptance of the Inverted Classroom Model:

1. How did students value the technical and aesthetic quality of the educational materials created by the teacher?
2. Did the digital materials contribute to efficiently transmit the course content?
3. Was the integration of the online and the in-class phase consistent?
4. Was the workload appropriate?
5. What was the students' general opinion about this methodology?

<sup>1</sup> The terms Digital Natives (Prensky 1), Net Generation (Jones and Cross 10; Kennedy et al. 517), Generation Y (Kennedy et al. 517) or Millennials (Jones and Cross 11) include the generation born after 1983, to whom the emerging technologies constitute a familiar element. It is believed that this circumstance shapes their way of learning. Native Digitals, for instance, are used to perform multiple tasks simultaneously, learn through exposure and interaction, prefer visual images or multimedia rather than text and search practical applications to their knowledge (Windham 46–52).

## 2. Methodology

### Participants

The participants in this study, four men and six women (n=10), were students of a Spanish as a Foreign Language course which took place from October 2014 to February 2015 at the Language Centre of the University of Saarland in Germany. The author did not have any influence on the selection of the participants. All students were German except two: one came from Bulgaria and another one was Austrian-French.

### Data gathering tool

Participants took part in an online survey consisting of a questionnaire with ten Likert-scale items and one open-ended question (see Appendix I). Participating in the survey was not compulsory.

### Procedure

The researcher was also the course instructor. The reliability and validity of the process was assured firstly by using the same questions for all participants and also by applying objective criteria when designing the items. These criteria, based on the questionnaire "The e-Learning Experience Questionnaire" (Ginns and Ellis 57–61), were the following:

1. Simple language
2. Short and simple questions
3. Absence of negative questions

### Scenario Description

The course adopted the methodology Inverted Classroom Mastery Model (Handke 183–9). According to this approach, participants have to pass an online test before the in-class session in order to show that they had acquired the required basic knowledge to actively participate in class.

The online course was delivered using the learning management system Moodle<sup>2</sup> and included the following elements:

<sup>2</sup> <https://moodle.org> [retrieved 28-09-2015]

## 1. Content presentation

The grammar elements were presented through micro-teaching videos (Handke 104). The videos were created by the teacher using the open source video editor software KdenLive<sup>3</sup>. For the presentations, a wide range of tools were used, such as Drive<sup>4</sup>, PowToon<sup>5</sup>, Moovly<sup>6</sup>, Present.me<sup>7</sup> and Movenote<sup>8</sup>. In some cases, an oral narration was added in the post-production phase. In those cases, screencasting software and audio editor software such as Audacity<sup>9</sup> were used. Finally, the videos were uploaded to YouTube<sup>10</sup>.

The lexical content was introduced through a wide range of tools: educational videos created by Tío Spanish, a website to learn Spanish online<sup>11</sup>; Quizlet<sup>12</sup>, a digital flashcards application; and ThingLink<sup>13</sup>, online software which adds hotspots to a picture.

## 2. Online activities

The online activities were created using the Moodle module Quiz or with the open source authoring tool Hot Potatoes<sup>14</sup>. They allowed students to practise the presented content. As long as the technology permitted, a wide range of question type was used: multiple choice, true/false, short answer and drag and drop. Multimedia elements were also utilised.

## 3. Online test

Through the Moodle quiz, students had to show they had acquired and understood the content. The quiz closed twenty-four hours before the in-class session, had to be passed with at least 50% of the whole score and could be repeated twice.

Once the test was closed, the teacher reviewed the results and sent individual notifications to students where she either congratulated the high scores obtained, commented on alternative correct answers which were not contemplated in the test or clarified mistakes to students with a low score and encouraged them.

- 3 <https://kdenlive.org/> [retrieved 28-09-2015]
- 4 <http://drive.google.com> [retrieved 28-09-2015]
- 5 <http://www.powtoon.com> [retrieved 28-09-2015]
- 6 <https://www.moovly.com> [retrieved 28-09-2015]
- 7 <https://present.me/> [retrieved 28-09-2015]
- 8 [www.movenote.com](http://www.movenote.com) [retrieved 28-09-2015]
- 9 <http://audacityteam.org/> [retrieved 28-09-2015]
- 10 [www.youtube.com](http://www.youtube.com) [retrieved 28-09-2015]
- 11 <https://www.youtube.com/channel/UCyqfGTu-9hL3OBkiCKogJuA>
- 12 <http://quizlet.com/> [retrieved 28-09-2015]
- 13 <https://www.thinglink.com/> [retrieved 28-09-2015]
- 14 <https://hotpot.uvic.ca> [retrieved 28-09-2015]

The in-class session was organized as follows:

1. The test was commented on and potential problems solved (approximately 20% of the in-class time)
2. Teacher-led activities (approximately 20% of the in-class time)

These were warm-up activities. The aim of these was to recall the concepts of the lesson, so that students would be prepared to actively participate in the following phase.

3. Interactive tasks (approximately 60% of the in-class time)

These consisted of partner or group activities of a broad type such as information-gap, opinion-gap or group polls.

## 3. Results

The first research question of the study examined to what extent students valued the technical and aesthetic quality of the online materials. Figure 1 (Annex II) presents a descriptive statistic in the form of a graphic about the students' favourite activities and table 1 (Annex II) shows the detailed answers for the items focusing on the technical and aesthetic quality of the online materials.

The most evident fact is that each student had a different learning style, since all activities were voted on and none of them was clearly the favourite one. Videos and interactive pictures were the least voted for and the online exercises and tests the most voted for, although the difference is not conclusive. This data corroborates the need to use different types of activities in order to reach all learning styles.

Participants appreciated the technical and aesthetic quality of the digital materials. These results coincide partially with the ones of Hung's study (91). Participants of that study were satisfied with the format and structure of the learning materials and appreciated the control and freedom of choosing when and how to complete the activities, an aspect that is also mentioned by one student in the present study. But, in contrast to Hung's students, participants did not mention the design of the learning materials as the most relevant reason why they valued the inverted learning environment. Rather, they appreciated the effect the materials had on the dynamics of the in-class sessions. A detailed description of this point is described in the following section.

### Educational value of the materials

The second research question of the study sought to determine whether participants appreciated the educational value of the materials. Table 2 (Annex II) displays the detailed answers for the items focusing on the educational value of the online materials.

Students found that the materials had a high educational value. According to participants' responses, the materials explained the concepts clearly and they prepared for an efficient participation in the in-class phase. These results suggest that, in the Inverted Classroom Model, the focus is not on the means through which the information is provided, but on a sound instructional design and on an appropriate choice of materials.

Furthermore, participants found that the autonomous work of the pre-class phase prepared for an active participation in the in-class phase. Three out of ten participants emphasized this aspect. In particular, they indicated that the pre-class work facilitated a more effective and dynamic participation in class (s. table 4, Annex II). As mentioned in the previous section, this data differs slightly from the results described in Hung's paper. In that study, enhanced interaction was the second most satisfying aspect reported by students (91). In the present study, the extent to which the materials contributed to a more active and efficient participation in the in-class phase was the most valued and cited aspect of the pedagogical approach. Thus, while the data of Hung's study suggests that students appreciated the design of the learning materials, participants in this study focused on other aspects of the learning materials, such as the way they influenced the dynamics of the in-class time and their learning process. Therefore, these results coincide with the observation of Strayer, who confirms that

"students in an inverted classroom become more aware of their own learning process than students in more traditional settings." (191-2)

In short, students appreciated the educational value of the online materials because they found that they enabled them to participate in the in-class session more actively.

#### *Integration between the online and the face-to-face component*

The third research question of the study analysed whether the online and face-to-face components of the course were integrated into a coherent whole. Table 3 (Annex II) presents the detailed answers for the items focusing on this aspect.

The consistency between the autonomous work in the pre-class phase and the activities in the in-class phase was definitely clear to most participants. The course structure was also clear to them, although the results of this item are less categorical. Clear integration and organization are essential in a good instructional design for blended learning, as the results of Hung's study (91) and Strayer's recommendations (191) suggest. The author of this study put special emphasis on this aspect and students perceived it. In the particular case of this study, the integration of the two phases was achieved by including in the design of the face-to-face session at least one task that focused on the elements that students went through in the online phase. Besides, a clear structure was accomplished using not only a homogeneous design but also a consistent terminology throughout the learning management system. Thus, the self-learning activities were included under the rubric "Manos a la obra", the topics were called "Módulos", the educational videos or presentations "Introducción", the exercises "Actividades" and the tests "Test". Under each headline all details of each element were explained every week, i.e. whether they were optional, the deadline and some technical specifications. This apparent redundancy turns into a valuable orientation in online and blended scenarios, as Ko and Rossen state (125).

### Workload

The fourth research question of the study investigated whether the students found the course workload appropriate. Table 4 (Annex II) displays the detailed answers for the items focusing on this aspect.

Unlike the opinions of participants in Strayer's study (183), the data suggests that students perceived the workload as completely appropriate. Although the data does not present information on the amount of time dedicated to the pre-class phase, it does reflect the fact that a course based on the inverted classroom is completely feasible in terms of amount of time invested by the students. Based on data from his study, Strayer (191) argues that the inverted classroom model may not be the most appropriate methodology for an introductory course. In the case of Spanish as a Foreign Language and regarding the amount of work students need to complete, this methodology is also a perfectly suited methodology for beginners.



### General opinion about the methodology

The fifth and last research question of the study explored general opinions of participants on the inverted classroom approach. Figure 2 and table 4 (Annex II) display the answers regarding this aspect.

The students' general opinion about the methodology of the inverted classroom was gathered through item 12 of the questionnaire. The data is categorical, since 90% of the participants expressed they would like to participate in another course with this methodology. This positive attitude towards the inverted classroom model is consistent with previous studies (Hung 90; Lage, Platt, and Treglia 35).

Regarding the answers to the open question, most participants felt that the course methodology was efficient. Some students found that the pre-class phase allowed them to participate more actively in the in-class session. Others liked the flexibility that online activities gave and some others claimed the course structure allowed them to work on the course content in a more productive way. One participant appreciated the dimension that in-class sessions acquired thanks to the liberation or reduction of the frontal component and two students found that the working methodology promoted learning, since it forced them to work regularly each week. One participant answered that, with this methodology, he/she learned a lot with little effort. This statement proves this methodology to be highly productive.

This data contradicts that of Strayer (183, 188, 189). In that study, students in the inverted class were more willing to work together and interact with other students, but they felt frustrated by the varied activities in class. They also found that the loose atmosphere that this methodology brought to the classroom had a negative impact on the classroom dynamics. The reason for these different perceptions might lie in the methodology applied during the in-class sessions. As mentioned before, the Task-Based Language Learning and Teaching approach focuses on communication and interactivity and elements such as a wide range of activities and an apparent loose structure are part of it.

One student criticized the lack of immediate feedback and complained about the impossibility of resolving problems as they arose. It is evident that the inverted classroom demands a more intensive self-study than other traditional methodologies and it might be counterproductive for learners who need strong guidance in their learning process. It is therefore relevant to ask

if one factor that explains the satisfactory results in this study was simply the fact that the students who participated in it had a suitable learning style for this methodology.

### 4. Conclusions

Implementing the Inverted Classroom Model reduces the amount of class time dedicated to teacher lectures and therefore increases the possibility for interaction between students and between students and teacher. Thus, the classroom emerges as a scenario where learners are the centre of the learning process and where they adopt a dynamic and active role. The study presented here described a course in Spanish as a Foreign Language based on this methodology. Using an evaluation research design, this study aimed to give tools to teachers interested in applying this model, identifying elements which need further intervention as well as ones which facilitate its efficiency.

This study contributes to the existing literature by providing the first empirical data about students' perceptions of the technical, aesthetic and educational quality of the materials used in the online phase. Thus, teachers can assess whether they possess the skills and resources needed to implant this methodology.

The results suggest that no expensive or extremely sophisticated software is necessary to create materials with a high degree of technical and aesthetic quality. Furthermore, no particular training in multimedia design is necessary in order to develop decent online materials. A teacher who is able to use a webcam, to edit a video or an audio file and to create an online presentation can produce materials of high aesthetic quality. The opinions of participants in this study confirm that the key element is an appropriate instructional design, which includes the content of the activities, the consistent integration of the online and the in-class phases as well as a clear structure to the online course.

Moreover, this study provides evidences that language teachers of the 21st century have a complex and profound role. They are digital content editors, learning management system administrators, technical assistants, instructional designers and subject matter experts. And, more importantly, even in virtual or blended educational scenarios, the language teacher's role is still a fundamental and extremely relevant one.

This study confirms once more, as Hung (93) did, the feasibility of the Inverted Classroom Model for language teaching. Yet the

field of the Inverted Classroom Model in language teaching is under-researched and thus any question about it must still be investigated. The author of this study is particularly interested in the role the online phase has in facilitating knowledge acquisition. Thus, future studies should introduce independent variables in the online materials such as feedback quantity and type, activity type or quantity of multimedia content to assess to what extent these elements engage students in the learning process. All these questions can contribute to strengthen and improve the integration of technology in language teaching and learning.

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## Annex I: Questionnaire

### Annex I: Questionnaire

#### *Quality of the materials*

1. How would you assess the technical and aesthetic quality of the online materials? (1: very bad - 4: very good)

- |                                |   |   |   |   |
|--------------------------------|---|---|---|---|
| • Actividades online           | 1 | 2 | 3 | 4 |
| • Listas de palabras (Quizlet) | 1 | 2 | 3 | 4 |
| • Videos didácticas            | 1 | 2 | 3 | 4 |

2. The online tests helped me to work in an effective way (1: no - 4: yes)

1	2	3	4
---	---	---	---

3. The online materials explained the content in a clear way (1: no - 4: yes)

1	2	3	4
---	---	---	---

4. Which activities did you enjoy the most?

- Online tests
- Videos
- Flashcards (Quizlet)
- Interactive pictures (ThingLink)
- Online activities

5. The design of the online materials made the subject interesting (1: no - 4: yes)

1	2	3	4
---	---	---	---

#### *Structure and organization*

6. I always had clear the integration between the online and the in-class phase (1: no - 4: yes)

1	2	3	4
---	---	---	---

7. Working through the online materials helped me to learn during the in-class phase (1: no - 4: yes)

1	2	3	4
---	---	---	---

8. The online materials were clearly structured (1: no - 4: yes)

1	2	3	4
---	---	---	---

#### *Workload*

9. The workload of the online component was too heavy (1: no - 4: yes)

1	2	3	4
---	---	---	---

10. I had in general enough time to complete the online activities (1: no - 4: yes)

1	2	3	4
---	---	---	---

#### *Global opinion*

11. I would like to take part in more courses with this methodology

Yes	No
-----	----

12. Why?

## Annex II: Tables and Figures

Which activities did you find the most appealing?

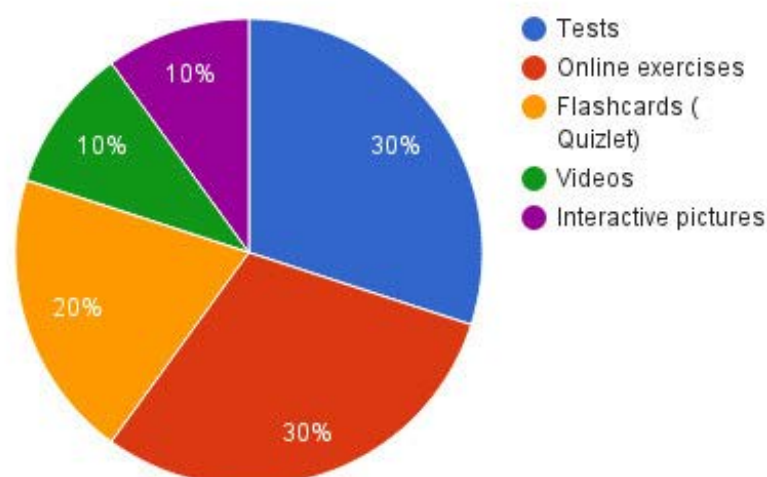


Figure 1: A descriptive statistic about the students' favorite activities

Item	Mode	Mean	S.D.	Likert scale response (%)			
				Very bad	Bad	Good	Very good
How would you asses the technical and aesthetic quality of the online materials?							
• Online exercises	3	3,1	.53	0	10	70	20
• Flashcards (Quizlet)	3	3,4	.66	0	0	60	40
• Educational videos	3	3,4	.48	0	10	40	50

Table 1: Descriptive statistics for items focusing on the technical and aesthetic quality of the online materials



Item	Mode	Mean	S.D.	Likert scale response (%)			
				No	Rather not	Rather yes	Yes
The online materials explained the content in a clear way	4	3,5	.67	0	10	30	60
The design of the online materials made the subject interesting	2	3,1	.83	0	30	30	40
Working through the online materials helped me to learn during the in-class phase	4	3,6	.66	0	10	20	70
The online tests helped me to work in an effective way	2	3	.89	0	40	20	40

*Table 2: Descriptive statistics for items focusing on the educational quality of the online materials*

Item	Mode	Mean	S.D.	Likert scale response (%)			
				No	Rather not	Rather yes	Yes
The online materials were clearly structured	3	3,4	.66	0	10	40	50
I always had clear the integration between the online and the in-class phase	4	3,4	.80	0	20	20	60

Table 3: Descriptive statistics for items focusing on the course structure

Item	Mode	Mean	S.D.	Likert scale response (%)			
				No	Rather not	Rather yes	Yes
The workload of the online component was too heavy	1	1,6	.80	60	20	20	0
I had in general enough time to complete the online activities	4	3,6	.66	0	10	20	70

I would like to participate in more courses with this methodology

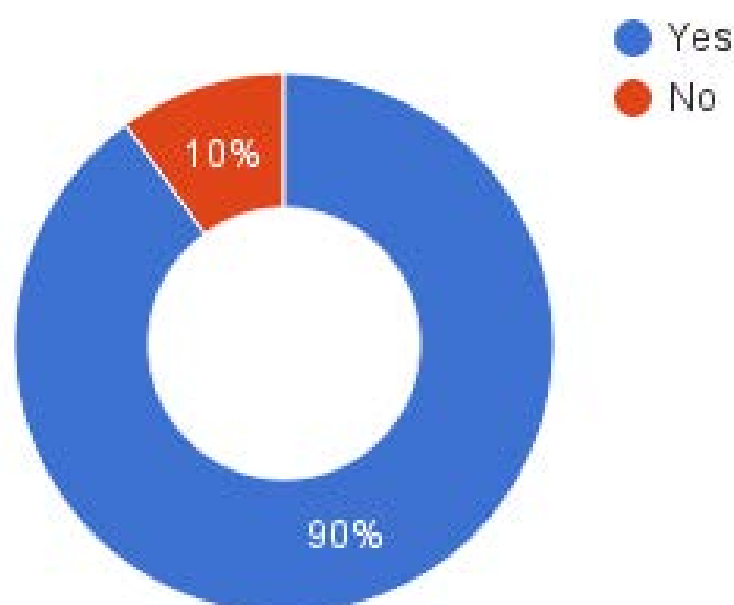


Figure 2: A descriptive statistic displaying the answers to question 11 of the questionnaire

<b>Positive opinions</b>
<p><b>Contribution to the in-class participation</b></p> <p>It makes sense to learn the vocabulary in advance, particularly when you have to learn a lot of words. Thus, communication in class becomes easy and more effective.</p> <p>I find that with this learning method I am well prepared and thus I can work in class effectively.</p> <p>I can participate in class in a much more dynamic way.</p>
<p><b>Learning flexibility:</b></p> <p>I can decide when I want to do the exercises and repeat them at any time.</p>
<p><b>Learning habits and efficiency:</b></p> <p>Through the tests I "had to" invest each week a little time. At the end of the term I have realized that I have learned quite with little effort.</p> <p>I have studied more regularly than before.</p>
<p><b>Dimension of the in-class session:</b></p> <p>The different exercise methods and the many repetition with pictures and dialogue games made the content easy to remember.</p>
<p><b>Negative opinions</b></p> <p>I rather pose questions directly to the teacher when they arise. This is however difficult, if I sit at home at the computer.</p>

Table 5: General opinions about the course

## Benefits of integrating Online interactivity in formative assessment in language learning at beginner level

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This paper will focus on the benefits of using a blended interactive formative assessment (IFA) for students and teachers in language learning. The assessment has evaluated (1) listening, (2) reading comprehension, (3) grammar and vocabulary and (4) writing. The first three sections were made interactive to be marked by an automated online function and to provide students with immediate feedback. A hardcopy of the writing section was handed to the teachers to be manually marked.

More than 170 students and four tutors took part in this case study. The interactive nature of the assessment allowed the students to engage with the technology and to develop ownership of their learning. The benefits also included using the Virtual Learning Environment (VLE) in a more meaningful way and not only as a repository for information. Students were encouraged to complete the interactive assessment within a fixed amount of time to replicate examination conditions in order to foster skills transfer.

Helping teachers to integrate more technology in their teaching was one of the main challenges. The workload demand is a deterrent from the academics' perspective. Once the examination has been set up, it can be used repeatedly over many years and can save the tutors a lot of marking time, which can instead be used for promoting collaborative learning in the classroom. This can be a key factor to encourage other tutors to embrace this practice.

### Tags

Keywords: Interactivity,  
Formative Assessment,  
Technology Enhanced  
Formative Assessment,  
Collaborative Learning

### 1. Introduction

The aim of this paper is to analyze the benefits of integrating online interaction in a formative assessment with language students at beginner's level. Following a successful pilot run in 2014 with 65 students, the scheme was expanded to 170 students of French level 1 and Spanish level 1 and 2. A description of the assessment approach will be followed by an analysis of the results of the questionnaire given to the students and interviews conducted with the tutors to evaluate their attitudes to the Interactive Formative Assessment (IFA) approach.

This practice was a blended exercise as some part of the assessment was conducted in paper and marked manually by the tutor. The main focus was not only the tutor's and student's reception to the online part of this IFA but we will also examine the face to face (F2F) feedback session that was provided to the students by one of the tutors, organised in a collaborative style. The challenges that we face based on students' and teachers' feedback will be discussed and the next steps that could be taken will be also considered.

## 2. Background

The idea of integrating an online element to the traditional formative assessment conducted at the King's College London Modern Language Centre (MLC) has its origin in our interest to explore the possibilities that online assessment can provide, making our virtual learning environment (VLE) more relevant to the students and helping them to develop their learning autonomy, facilitating at the same time technology enhanced learning (TEL).

### Students' expectations

Young people, as Webb (2010) points out, "have grown up with using ICT integrated in their lives so school students may have high expectations of using ICT in all areas of their lives, including to support their learning" and the same can be applied to these learners when they move to higher education. They arrive in the classroom expecting a myriad of technology enhanced learning solutions to support their learning and in many cases encounter a VLE that is only a repository of Word documents or PDFs. With this in mind we thought that creating interactivity in a paper exam that could provide immediate feedback would be welcome by our students. They could engage with this practice at their own pace and in their own time, promoting ownership of their learning.

### Tutors' engagement with technology

One of the priorities of the MLC is to promote and facilitate technology-enhanced learning. This study was informed by Davis' (1989) Technology Acceptance Model, which considers two main elements to promote engagement with technology: the Perceived Usefulness (PU) defined by as "the degree to which a person believes that using a particular system would enhance his or her job performance", and the perceived ease-of-use (PEOU), i.e. "the degree to which a person believes that using a particular system would be free from effort". We face the challenge, not only of training the teachers to develop their ICT skills, but also to help them to develop confidence using technology in their teaching. We considered that integrating interactivity in the FA could provide advantages for the teachers, in terms of saving them time and effort. This can be a motivating factor as the workload demands they face is one of the main obstacles they encounter when trying to embrace technology enhanced learning.

### Online Formative Assessment

Formative assessment plays an important role allowing the students to reach their learning aims and provide valuable data to the teacher to modify their teaching according to the class needs.

Webb (2010), reviewing Black, Williams et al, (1998) formative assessment meta-analysis, points out that "an effective implementation of formative assessment strategies and feedback can significantly increase students learning gains". She also points out that "the term 'formative' applies not the assessment itself, but to the functions it serves supporting students' learning and providing information that can be used to adapt the teaching to meet learning needs".

Reviewing the literature of online formative assessment Gikandi et al, (2011) defines "formative assessment as the iterative processes of establishing what, how much and how well students are learning in relation to the learning goals and expected outcomes". The main aim of the formative assessment is "to inform tailored formative feedback and support further learning". He specifies that the convergence of this kind of assessment with technology perspectives bring the concept of e-assessment that can adopt the forms of online or a complement of the face to face (f2f) instruction in its blended modality.

One of the advantages widely accepted of the online environments is that they can enhance the opportunities for immediate and ongoing feedback. Under this light we developed the IFA, putting special emphasis in the f2f feedback session. That was organised following Wiliam and Thompson (2007) five key aspects of formative assessment further developed by Black and Wiliam (2009): The authors specify the importance of "(1) engineering effective classroom discussion; questions and learning task to elicit evidence of learning, (2) providing feedback to moves learners forward; (3) clarifying understanding and sharing learning intentions and criteria for success; (4) activating students as owners of their learning; and (5) activating students as instructional resources for one another". This practice was well received by the students in the f2f feedback session. We will describe it in the next section.

## 3. Methodology

The subjects of this case study were 170 students of French 1 and Spanish 1 and 2 taking a credit bearing module. The



anecdotal reports of four of the seven teachers involved in this practice are also part of the findings reported in this paper. The data from the students was collected with an online questionnaire (see appendix 1) and interviews were conducted with the teachers asking them a few questions to facilitate their testimonial reports. (see appendix 2)

Most of the modules at the MLC include a mid-term formative assessment in the second term. The main focus of this assessment is to provide a meaningful feedback to the students to support their learning and to the tutors to adjust the development of their modules. This practice is also designed to help student to get familiar with the format of the final summative examination.

A word document formative assessment that the students download from the VLE is the common practice. The assessment is structured into four sections, which align to the intended learning outcomes: listening comprehension, reading comprehension, grammar and vocabulary and writing. A Microsoft Word document and audio files are accessed by the students in the VLE, after manually completing the responses of the paper, the students are asked to check their answers for the three first sections and correct the paper, using the marking scheme provided. After this practice the students hand in the assessment to the teacher to get the writing section marked and to receive feedback.

The IFA was structured following a blended format. The three first sections to evaluate listening comprehension, reading comprehension, grammar and vocabulary were made interactive to be marked online providing automated feedback to the students and the fourth section, writing, was manually done and given to the teachers to mark and provide feedback in the classroom.

WimbaCreate, a software which can create HTML pages out of word documents, was used to develop the IFA. Using the past paper and the marking scheme the interactive version was created and uploaded in Moodle including audio files and pictures. After entering their responses, the students were able to see if their answers were right or wrong and how many points they scored in each section. They needed to record the information manually in a form and hand it in to the teacher together with the writing section.

### Feedback in the classroom

Teachers worked with the assessment outcomes using different types of feedback activities. The one we are reporting here followed a collaborative learning approach, aligned with the five key aspects of the formative assessment, mentioned above. The f2f formative assessment also was informed by Johnson, Johnson and Stanne (2000) who state that “hundreds of research studies demonstrate that cooperative efforts result in higher individual achievement than do competitive or individualistic efforts” They consider that “cooperative learning is happening when students work together to accomplish shared learning goals” this definition is more often applied in the UK to the collaborative learning (Webb, 2010) that is the term we use here.

The marking of the writing section and the written individual feedback was finished and ready to be given to students providing teachers with valuable information about what the strengths and weaknesses of the students are. The teacher was also able to identify the target areas that needed some extra work. In the f2f feedback session, the papers were not handed in at the beginning of the class. Instead, a handout with typical and repeated mistakes, extracted from the pieces of writing was distributed to the students who were asked to work in pairs and collaborate to review the samples of writing.

The idea behind this activity was to maximize the opportunities for reflection and production through collaborative learning as a complement of the formative assessment. Students had to work together in order to find the mistakes in each statement, explain what the problem was and produce a meaningful new statement. The task was aimed to produce a productive discussion to show their learning allowing the students to become instructional resources to each other, following the first and fifth key of the formative assessment, (Williams, et al 2007). The teacher would go around the class listening to discussions and providing support whenever necessary, to make the learners move forward clarifying understanding and stating criteria to successes.

Working in pairs allowed more freedom to students to work at their own pace and on their own style, at the same time, they could provide each other support and confidence. Once pairs finished the activity, the results were shared with the whole class, summarizing and clarifying any possible doubts.

After this exercise, the papers were handed to students and time was allowed for them to reflect on their own results

and mistakes. By this time, students were familiar with the problematic areas and could make better sense of their mistakes as well as of the teachers' comments. They had more clarity of what to revise and they were redirected for extra practice to the online exercises on the VLE.

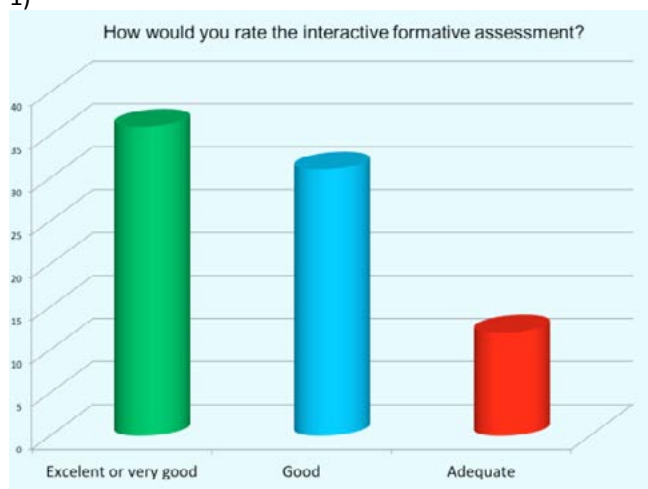
The fact that students did the other three sections online and obtained immediate feedback on their performance, not only saved administration work and time that was used by the teacher for face to face feedback, but also equipped students better to receive the final feedback in class as they were already aware of their strong and weak points. In fact, they started producing the feedback themselves by discussing and producing with peers. We thought that this created a sense of understanding and collaboration as well as students' awareness of their own strengths and weaknesses. The students also got a sense of achievement in being able to create a meaningful statement. This was reflected in the positive response to a questionnaire which results will be analysed in the next section

## 4. Results

### Students' response

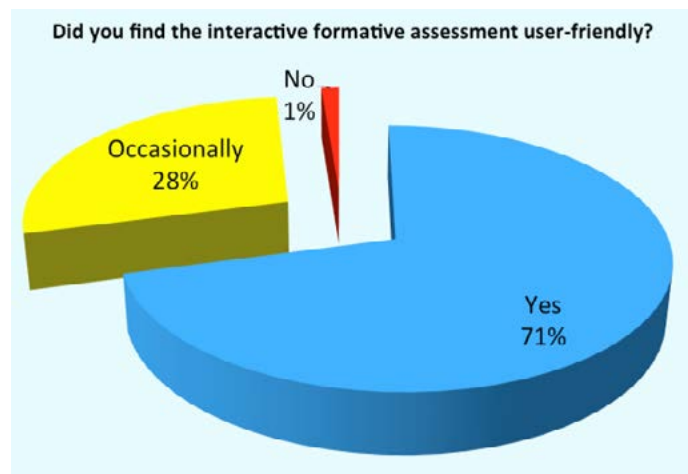
The majority of the students considered that the online formative assessment was excellent or very good, they find it user friendly and they thought that this practice helped them to reflect on their language learning and to improve their learning.

The results of the online questionnaire (answered by 86 students) show that 46% rated the IFA as excellent or very good, 40% thought that was good, 14% of the respondents rated as adequate and none considered that was inadequate. (See graph 1)



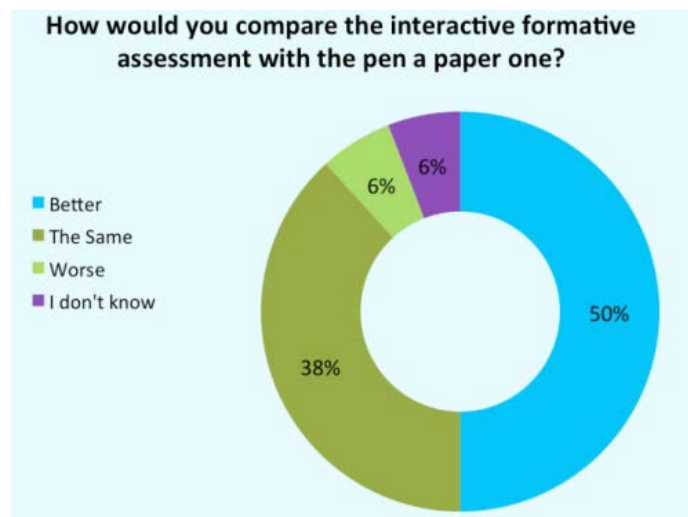
Graph 1. Students' responses rating the online interactive formative assessment.

When they were questioned if they found the IFA user-friendly, 71% answered yes, 28 % considered that occasionally it was user-friendly and 1% thought that it wasn't user-friendly. (See graph 2). That means that almost 30 percent of the users encounter a difficulty using the online part of the assessment.



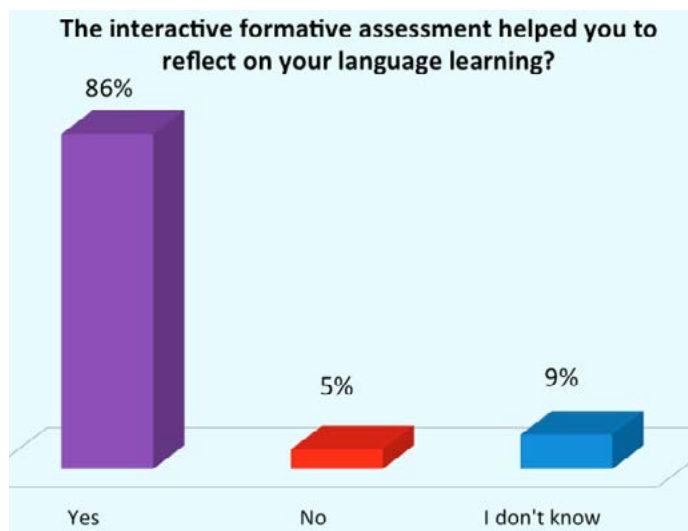
Graph 2. Students' rates of the user friendliness of the IFA.

Forty students of level 2 were asked to compare the IFA with a traditional pen and paper one that they had used the previous year. We found that 72 % thought that working online was better than using the pen and paper formative assessment, 40 % considered that it was the same, 13% rated it as worse and 5% answered that they didn't know. (See graph 3)

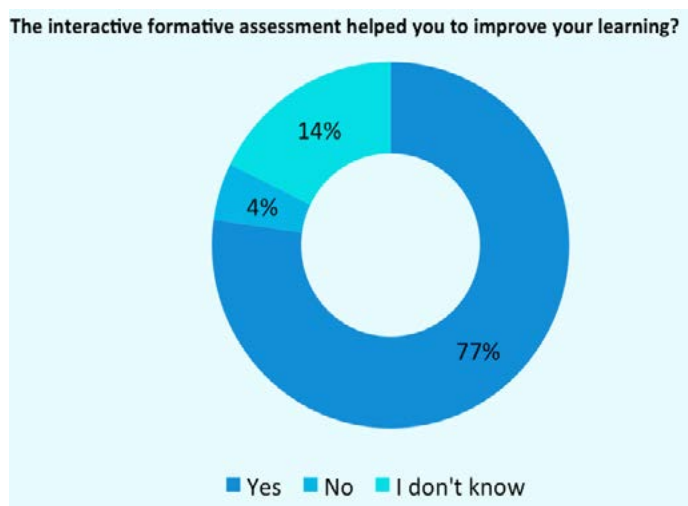


Graph 3. Comparison of the IFA with the pen and paper formative assessment.

A vast majority of 89% responded that the IFA helped them to reflect on their language learning (See graph 4) and 76% thought that the time and work invested in the IFA helped them to improve their learning (See graph 5).



Graph 4. The students thought that the IFA help them to reflect in the language learning.



Graph 5. The IFA help the students to improve their learning.

### Teachers' response

We designed seven open questions for the teachers to report on their experience using the IFA. Four teachers claimed that the whole experience was positive, two were not able to comment and one did not engage with this practice reporting that it was a waste of time. The four tutors who provided testimony asserted that the IFA was more visually attractive than the printed version of the Formative Assessment. They also considered that in general it saved them time and effort in terms of printing or photocopying and marking. They also asserted that written version on its own was easier for students to submit and the online activity allowed the VLE to be more relevant for students as it was not only a repository of documents. They considered

that there were no main challenges or disadvantages using the IFA and they also mentioned the benefit of saving a lot of paper. The four teachers considered that storing the score of the three parts of the IFA conducted online was a way to improve the IFA.

The tutors also observed that the online assessment encouraged independent learning and that the students' own reflections on their performance could be used in the general feedback session once the assessment has been marked. With this response we thought we covered, as we intended the two elements of the David's Technology Acceptance Model previously mentioned in order to make the teachers to engage with TEL.

## 5. Discussion and Conclusion

This blended exercise had a very good reception among teachers and students and will be expanded to other languages and levels. The anecdotal report from the teachers showed the PU of the IFA and the teachers also reported the PEOU of the IFA. However a questionnaire to evaluate the attitudes can be applied to teachers in the future to gather more information to support the technology acceptance model.

The students and teachers attitudes to the IFA were positive and that has encouraged more teachers to use the online IFA. A project at a larger scale will be implemented in the near future. However one of the challenges of this practice was the fact that the software provided a score but didn't store it automatically. This was due to time constraints to develop better interactivity in the formative assessment. This need will be changed. We were aware that the quiz tool in Moodle, the virtual learning environment use in our university, offered better possibilities. We contrasted making the IFA using the quiz tool in Moodle and using WimbaCreate. We found that using the former took more time and skills to develop a similar assessment, than using the latter. As part of the aim was to make the teachers more confident in integrating technology into their teaching, we want them to be involved in the process of integrating interactivity. Due to the fact that the assessment was a word document, we opted for using WimbaCreate, as it is very easy for converting documents into html pages. As we didn't include the functionality of saving the score the student record it in a document that they needed to download and handed it in to the teachers, together with the writing, to obtain a full mark in the feedback session. The next step to develop the IFA further is to provide a stored score of the three first sections of the assessment for the students' convenience.

After analysing the results and having had peer feedback, we can see that there are benefits for having more detailed student's feedback. It will be necessary in the future to gather information on how the IFA helped them to reflect in their learning in particular. The questionnaire should also included question to see which particular language skills were improved.

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Appendix 1  
Interactive Formative Assessment Feedback

Student's Name: \_\_\_\_\_

Teacher's name: \_\_\_\_\_

**1 How would you rate the interactive formative assessment?**

☐ excellent    ☐ very good    ☐ good    ☐ adequate    ☐ unsatisfactory

**2. Did you find the interactive formative assessment user-friendly?**

☐ yes    ☐ occasionally    ☐ no

**3. Have you done a pen and paper formative assessment in the past?**

☐ yes    ☐ no

**4. If yes, how would you compare the interactive formative assessment with the pen and paper one?**

☐ better    ☐ the same    ☐ worse    ☐ don't know

**5. Do you think that the interactive formative assessment helped you to reflect on your language learning?**

☐ yes    ☐ no    ☐ I don't know

**6. Do you think that the time and work that you invested in the interactive formative assessment helped you to improve your learning?**

☐ yes    ☐ no    ☐ I don't know

**7. Can you suggest any ways to improve the interactive formative assessment?**

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**8. Any further comments?**

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**Thank you for filling out the questionnaire!**



## APPENDIX 2

### FEEDBACK ON PILOT OF THE INTERACTIVE ONLINE FORMATIVE ASSESSMENT

1. Was it a positive experience and why?
2. How did the students react?
3. Did it save time and effort to you and the students?  
(without considering the time that it took you to develop it or helping me developing)
4. Do you think that this experience can make KEATS more attractive and not mainly a repository for Word or PDF documents?
5. How do you compare the interactive version with the pen and paper version?
6. Did you find any challenges or disadvantages on implementing the IFA?
7. Do you have any further comments?

## Machine Translation and the Disruption of Foreign Language Learning Activities

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This study examines the question of how language teachers in a highly technology-friendly university environment view machine translation and the implications that this has for the personal learning environments of students. It brings an activity-theory perspective to the question, examining the ways that the introduction of new tools can disrupt the relationship between different elements in an activity system. This perspective opens up for an investigation of the ways that new tools have the potential to fundamentally alter traditional learning activities. In questionnaires and group discussions, respondents showed general agreement that although use of machine translation by students could be considered cheating, students are bound to use it anyway, and suggested that teachers focus on the kinds of skills students would need when using machine translation and design assignments and exams to practice and assess these skills. The results of the empirical study are used to reflect upon questions of what the roles of teachers and students are in a context where many of the skills that a person needs to be able to interact in a foreign language increasingly can be outsourced to laptops and smartphones.

### Tags

Keywords: Interactivity, Formative Assessment, Technology Enhanced Formative Assessment, Collaborative Learning

### 1. Introduction

This article examines the attitudes of university foreign language teachers to machine translation (MT)<sup>1</sup> as part of a project investigating the conditions which afford and constrain foreign language learning in a Swedish higher education context in the 2010s. This particular study was in part inspired by the reaction of a fellow educational researcher and language learner, who was quite surprised when I said that I believed that my language teaching colleagues considered the use of MT in academic contexts to be cheating and a hindrance to language learning. By examining this issue, I hope to contribute to the understanding of how different actors in a higher education context adapt their activities to the rapidly expanding repertoire of available resources.

The results of the empirical study are used to reflect upon questions of what the roles of teachers and students are in a context where many of the skills that a person needs to be able to interact in a foreign language increasingly can be outsourced to laptops and smartphones. The research question is: How do teachers view MT in the context of foreign language

<sup>1</sup> Such as Google Translate, BabelFish, and Bing Translator. "Machine translation" is the term used in the research literature, archaic as it sounds.

courses at a Swedish university that makes extensive use of digital technologies, and what implications does this have for the personal learning environments of students?

Those who view the existence of different languages as a communication problem to be solved, rather than as an example of the richness and diversity of human culture and cognition, would argue that rapidly improving MT technologies, plus the dominance of English internationally, obviate the need for the study of other languages, an argument made by many university administrators keen to save money on instruction (and even by a former president of Harvard University) (Clifford, et al., 2013, p. 109). However, the arguments against MT from educators are sometimes no less instrumental:

We can imagine a nightmarish scenario (for learners) in which automatic speech recognition (ASR) makes possible automatic inter-pretation: the program recognizes the incoming L2 text and translates it. A text-to-speech routine then reproduces the speech in L1. [...] Will such a development discourage well planned work on listening comprehension? (Robin, 2011, pp. 111–112)

Is it really a “nightmare” that MT may render a particular type of classroom exercise obsolete? Clearly, MT is one of a number of recent technological developments which have the potential to disrupt some of the time-tested traditions of the language teaching and learning process.

Several studies on teachers’ attitudes toward MT have been conducted in recent years (see section 2 below); this article attempts to add to existing knowledge by offering the perspective of teachers working in a highly technology-friendly environment, a university in Sweden at which nearly all the foreign language courses are taught by distance, and by adding an activity-theory perspective to the question, by examining the ways that the introduction of new tools can disrupt the relationship between different elements in an activity system. This perspective has implications beyond simply whether it is “good” or “bad” for students to use particular technologies, opening up for an investigation of the ways that new tools have the potential to fundamentally alter traditional learning activities.

## 2. Previous Research

As a number of researchers (Garcia & Pena, 2011; Niño, 2008; Somers, 2003) have pointed out, the question of whether and how language students should make use of MT goes back to the 1980s, and yet, empirical studies are less numerous than one

might expect for a research field now over 30 years old. In recent years, however, interest has increased, presumably because of the availability of free web-based machine translation (WBMT), replacing the expensive MT software of the 80s and 90s.

There are a number of studies (e.g. Lewis, 1997 La Torre, 1999) which describe methods of training future translators in the skilled use of professional translation software. Somers (2003) provides recommendations for the classroom use of MT in both the context of advanced translation courses and beginner- and intermediate-level proficiency courses. In the overview of the previous literature below, I have mostly excluded studies which are primarily concerned with how to teach the use of MT to future professional translators, as in that context MT is seen as a working resource.

In sections 2.1-2.3 below, I have grouped previous research on the use of MT in second or foreign language proficiency courses in higher education into three categories. Those in the first category examine teachers’, and sometimes students’, attitudes toward students’ use of MT in their course-related work. Those in the second category begin with the assumption that the use of MT by language students is cheating and explore ways of preventing or discouraging the use of MT. Finally, the third category consists of a growing number of studies which have a more accepting, or even positive, view of MT and which seek to incorporate it into educational practices. In Section 2.4, I draw on studies that go slightly beyond the question of MT in language learning contexts in order to raise issues which are addressed in the discussion of the empirical study.

### 2.1 Teacher and Student Attitudes toward Machine Translation

Clifford et al. (2013) surveyed students and teachers of Romance languages at Duke University. They found that students had a more nuanced relationship to MT than anticipated. Although 88% of the students used MT at least occasionally in their studies, they were aware of the limitations of MT, 91% having noticed an error when using it, but a large majority believed that MT was helpful to them in learning new vocabulary. The teachers Clifford et al. surveyed, on the other hand, were more skeptical. A majority of them said MT was not useful for language learning at the beginner level and that their course syllabi explicitly forbade students to use MT for graded assignments. The reasons given for this were they believed that students would become dependent on MT, that MT is inaccurate, and that even when

MT is used as a dictionary to look up individual words, students miss the opportunity to learn about nuance and alternative translations offered by more traditional dictionaries. However, some of the teachers “envision the greater integration of MT in the foreign language learning process and who demand the acknowledgment of the existence of such tools by the teaching profession” (Clifford et al., 2013, p. 115).

The teachers who responded to Niño’s (2009) study exhibited positive attitudes toward MT. It is possible that this is related to the fact that they were recruited through EuroCALL, a network for teachers and researchers interested in computer-assisted language learning. Niño found that both students and teachers viewed the use of MT (by advanced learners, at least) favorably, and that MT’s shortcomings could be used for “raising [students’] awareness as to the complexity of translation and language learning” (Niño, 2009, p. 253). Baker (2013) explored the attitudes of students and teachers toward the use of MT by students with English as a second or foreign language in the context of English composition courses not specifically designed for language learners. She found that “both students and instructors believed that using translators facilitates language learning and use but also believed translators could be an instrument of plagiarism” (Baker, 2013, p. 95).

## 2.2 Preventing the Use of MT in Educational Contexts

Although at least one study (Gaspari & Somers, 2007) discusses the need for discouraging students from using MT for single-word-lookup, the majority of studies that problematize the use of MT by students are concerned with the translation of longer texts and the belief that this is a form of cheating. Correa (2011) surveyed 81 university-level language teachers at 22 different U.S. institutions on what they considered cheating in the foreign language classroom. Of a list of 20 activities that could be considered cheating, use of MT was ranked 14th in seriousness, with an average score of 1.58 on a 3-point scale, where 0 was no academic dishonesty and 3 was very serious academic dishonesty.

Somers, et al. (2006) treat the use of MT in language classrooms as a type of plagiarism and seek automated ways to detect it, focusing on “on the errors that MT makes that no human, however inept at translation, would make” (p. 3). They conclude that the results of their study “suggest that there are a number of measures that can indicate that a translation is suspiciously

similar to a free online version” (p. 6). Similarly, McCarthy (2004) identifies the problems that unauthorized use of MT poses for many of the kinds of tasks commonly assigned in language courses, and how teachers may detect and/or prevent its use.

Harris (2010) also focused on the errors made by MT, in particular the English-Japanese translations provided by BabelFish and WorldLingo, and proposed several measures to communicate to students “that unless there is a specific purpose for them, MTs are unacceptable and will have a detrimental effect on the learning process” (p. 28). Groves & Mundt (2015) examined the question of whether Google Translate is currently capable of producing translation into English from Malay and Chinese at the level of an intermediate student of English, to see if, in terms of the quality of the finished product (not the learning process), learners would be better off using MT than struggling to write their own texts from scratch. They conclude that Google Translate is nearly at the same level of accuracy as an intermediate student of English, and will likely only become more accurate with time.

## 2.3 Incorporating the Use of MT in Educational Contexts

Some of the studies which argue for the use of MT in language learning contexts start with the assumption that use of MT detracts from language learning, but that its use by students is inevitable, or as Williams puts it:

Students are expected to learn how to communicate in a foreign language, thereby rendering the use of Web-Based Machine Translation (WBMT) superfluous, as typing a text and having the software translate it involve neither communicative activity nor language analysis. Nonetheless, anecdotal evidence points to widespread use of WBMT for homework and writing assignments. Rather than looking only at the possible misuses of this relatively new electronic tool, however, we may wish to examine it further for its potentially positive applications in the study of foreign languages (Williams, 2006, pp. 566–567).

Williams’s study is focused on walking students through the use of a WBMT interface as a sort of pre-emptive measure to illustrate the shortcomings of MT. In fact, many of the studies make use of MT’s current shortcomings to generate two types of exercises: post-editing and contrastive analysis. Post-editing exercises involve translating a text into the target language using MT and using one’s skills in the target language to “correct” the “errors” made by the computer. This kind of task is suggested by Belam (2002 & 2003); Somers (2003), Kliffer (2005) Niño (2008), Zanettin (2009), and Groves & Mundt (2015).

Contrastive analysis involves translating from the target language to the students' native language so that students can see the kinds of errors produced in order to highlight differences in language structure, idioms, and collocations (Corness, 1985; Somers, 2001 & 2003; Anderson, 2013). While much of this research has been focused on advanced learners and/or translators in training, (Kenny & Way, 2001; Belam, 2002; O'Brien, 2002; Niño, 2008); others have advocated for and/or investigated their use with beginners as well (Corness, 1985; García & Pena, 2010).

Variations on the above have also been suggested, such as Richmond's (1994) "doing it backwards"; i.e. giving students a text in both their native language and the target language, and having them edit the native language text until, when run through the translator, it produces a result identical to the target language sample. Richmond considered this exercise a success, as students learned grammar structures in a way that they described as amusing and enjoyable and were exposed to error-free text in the target language.

Garcia and Pena (2011) found that using Tradukka, an MT interface which works on top of Google Translate, to write short texts resulted in a group of 16 students of Spanish at the beginner and low-intermediate levels writing more text of higher quality. In a related study testing the integration of a number of different digital tools and online activities of 41 students in a beginner-level university Spanish course, Pena (2011) included the use of Tradukka for pre-and post-editing of texts, and found high levels of student satisfaction.

## 2.4 The Potential of MT to Transform Learning Activities

The introduction of MT into language learning contexts has been compared to the advent of the calculator (see Luton, 2003, p. 770; Groves & Mundt, 2015, p.120). However, while there seems to be general agreement that children should learn to do basic arithmetic without a calculator before moving on to more advanced operations in which the calculator can be used as a shortcut, it is possible that the parallel to MT and language learning does not extend as far. In the previous research there are indications that MT may be more of a game-changer, transforming the language learning process, than a shortcut: Baker (2013) suggests that "the use of online translators can also be seen as a form of language socialization" (p. 6); Garcia and Pena (2011) claim that MT helped their beginner-level students

produce greater amounts of texts and more engagement with the target language; and Pena (2011) reported that students had a high degree of satisfaction with their work with MT,

identifying the machine translation (MT) interface as a type of scaffolding that together with the other digital tools and online activities presented in this paper can support students in generating authentic language while interacting and collaborating in an enjoyable learning environment, with technology as the facilitator and stimulator of communication" (Pena, 2011, p. 66)

Youngs, et al. (2011) also point out the utility of MT for presenting beginner- and intermediate-level students with authentic language materials<sup>2</sup>, and Williams (2006) suggests that the use of MT can "force students to think about language as a communication tool, not as a set of decontextualized vocabulary words or phrases" (p. 574).

Looking beyond studies focused on MT, a number of researchers have raised theoretical and philosophical questions about the ways that technology is creating in the way teachers and students alike view the language learning process and the nature of the activity. Peters and Frankoff (2014) suggest that "[r]ather than lament[ing] the fact that many of our students are copying and pasting information in their writing assignments, we need to be proactive and tap into these new digital skills that students have acquired" (p. 259), while Clifford, et al. (2013) ask:

Are we using the best practices in pedagogy for students trained in new cultural patterns of multidimensionality, continuous change, flexible structures, collaboration and dynamic reconfiguration? Our discussions with colleagues revealed shared observations of and puzzlement over our students' writing habits, notably their use of multitasking and multiple sources in drafting essays. We had observed that students write with multiple tabs open in their browser; they consult on-line dictionaries; and use almost exclusively on-line sources. (Clifford, Merschel, & Munné, 2013, p. 109).

There are clear indications, then, that constellations of technologies have opened up for different ways of creating text, whether it is in the author's first language or second (or third). The present study attempts to take the question of the role of MT further and consider its potential for transforming the activities and relationships that form students' personal learning environments.

<sup>2</sup> Texts and other media created for and read/watched by native speakers of the target language and not adapted or simplified for learners.



### 3. Theory

Previously (Case, 2015), the case has been made for viewing adult foreign language students' personal learning environments (PLEs) as activity systems, drawing on Buchem, Attwell, & Torres (2011), who, in turn, drew from Engeström (1987) (see Figure 1).

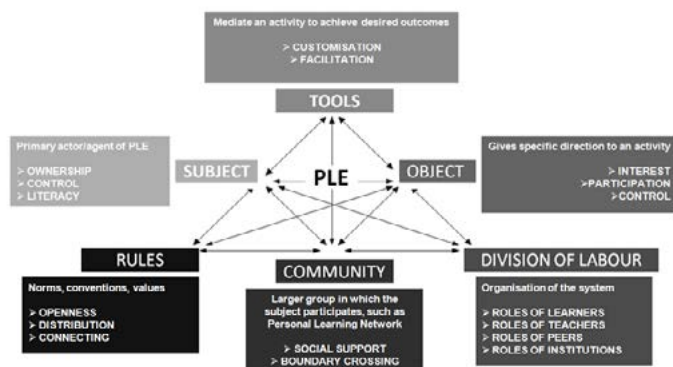


Figure 1. The personal learning environment as an activity system (Buchem et al., 2011)

Figure 1. The personal learning environment as an activity system (Buchem, et al, 2011)

While many studies on the relationship between digital tools and learning are highly technocentric, viewing the PLE as a particular set of applications, this view allows for a wider perspective that takes into account the relationship between a number of different contextual factors that afford and constrain a learning activity. In visualizing students' personal learning environments as an activity system triangle as pictured in Figure 1, the arrows are meant to illustrate that a change in one aspect of an activity system exerts pressure on all other aspects of the system. The study of teachers' attitudes toward MT is a case in examining possible ways that the introduction of a single tool can affect the rules, community, and division of labor of a PLE/ activity system.

Activity can be seen as divided into three levels, the top being "driven by an object-related motive", the "middle [...] by a goal" and the lowest level "by the conditions and tools of action at hand" (Engeström & Miettinen, 1999, p. 4). In other words, there are three aspects to an activity: the reason for doing it, what is achieved, and the means of achieving it. Wertsch (1981) calls these "activities", "actions" and "operations", respectively (p. 18). However, the introduction of a new tool may have repercussions not only at the level of operations, but on actions and activities as well. In "Development, movement and agency: Breaking away into mycorrhizae activities", Engeström points at the potential destabilizing effect of new digital tools on traditional learning:

When an activity system adopts a new element from the outside (for example, a new technology or a new object), it often leads to an aggravated secondary contradiction where some old element (for example, the rules or the division of labor) collides with the new one. Such contradictions generate disturbances and conflicts but also innovative attempts to change the activity, making the zone of proximal development an invisible battleground. The stiff rules lagging behind and thwarting possibilities opened up by advanced new instruments are a common example. A typical secondary contradiction in the activity of school-going may be, for instance, triggered by the introduction of computers and Internet into the students' work. Internet opens up a huge range of interesting and entertaining objects that potentially jeopardize the school's control over students' attention and effort in classrooms, leading to what is called E-cheating (Engeström, 2006, p. 28).

The introduction of ubiquitous MT into university-level language education is a concrete example of the situation described above: they render some kinds of operations (e.g. translation exercises) obsolete, but may open up for new operations, actions, and activities. The empirical study described below was designed with the assumption that MT has the potential to introduce disturbances, conflicts, and innovative changes in the ways that languages are taught and learned.

### 4. Method

In spring 2012, a questionnaire was sent to all teachers in the foreign language department at a regional Swedish university (hereafter called RSU). RSU, and its language department in particular, has been a pioneer in technology-mediated distance education in Sweden; since 2003 it has offered distance courses that have real-time, synchronous seminars using video-conferencing platforms (the one used at the time of writing is Adobe Connect). Because of this, the distance courses do not differ in structure from their campus-based equivalents in terms of the type of assignments or the number of seminars. All of the language courses at RSU are available as distance courses, and the majority are taught only by distance, with no campus option. Besides Adobe Connect, the courses rely heavily on their use of a learning management system, Fronter. The teachers in this context, then, are accustomed to using digital tools in their teaching activities.

Respondents included teachers of English, Spanish, French, German, Italian, Portuguese, Russian, Arabic, Japanese, and Mandarin, most of whom are native speakers of the language they are teaching and who come from a variety of backgrounds other than Swedish. The questionnaire was made available in

Swedish and in English. Responses in Swedish included below were translated by me.

The first item on the questionnaire was a question about which, if any, machine translators the respondents themselves used, while the remainder of the questionnaire was a series of statements to which respondents indicated their degree of agreement or disagreement using a 7-point Likert scale. At the end of the questionnaire, respondents were given space to write lengthy comments.

Thirty-five of the 90 teachers in the department responded to the questionnaire. The results of the questionnaire were presented at a meeting of the language department at which approximately 30 teachers participated (not necessarily the same teachers who responded to the questionnaire). Following the presentation, the meeting participants formed two smaller groups to discuss the findings. I observed these discussions and took notes, but did not participate in them, moving between the groups and presenting the highlights of the discussion to the group as a whole afterward.

The Likert-scale items were analyzed using descriptive statistics. The comments were examined using qualitative content analysis, with particular attention paid to the ways that MT can be seen to be affecting the rules, community, and division of labor aspects of students' PLE/activity systems. Several themes unexpectedly emerged from multiple readings of the qualitative data, discussed in detail in section 5, where an overview of the questionnaire results and notes from the group discussion are also presented. Graphs of the complete questionnaire results are included in the appendix.

## 5. Results

When asked which machine translators the teachers themselves used, seven of the respondents (20%) said that they didn't use MT, while 24 (69%) indicated that they used Google Translate. In addition to Google Translate, some of those who used MT used Dictionary.com, dict.cc, Babylon, BabelFish, The People's Dictionary, multitrans.ru, Babylon, Real Academia Española de la lengua, Rikaichan, and World Lingo, as well as an unnamed "Swedish-English dictionary" and a "Portuguese dictionary online". (Respondents were allowed to select more than one option and write in answers.)

The results for the Likert scale statements are shown in Table 1 below. "Agreed" is the number of respondents who chose 1-3

on the seven-point scale, "Neutral" is the number who chose 4 on the scale, and "disagreed" is the number that chose 5-7. The weighted average is given to show the strength of the agreement or disagreement for the group as a whole.

Statement	# Agreed (1-3)	# Neutral (4)	# Disagreed (5-7)	Weighted average
Machine translators produce poor translations.	21	11	3	2.94
Machine translators will someday be as good as human translators.	10	3	22	4.91
Machine translators are a tool to help human translators save time.	21	7	7	3.11
Machine translators are a good tool to help people communicate when they lack a common language.	22	6	7	2.97
Machine translators may encourage people to try communicating in a new language.	15	12	8	3.57
I would prefer if my students did not use machine translators when they write assignments.	23	6	6	3.03
If my students use machine translators, it will take them longer to learn the target language.	14	9	12	3.88
It is OK for students learning foreign languages to use machine translators to look up individual words.	30	3	2	1.86
It is cheating to use machine translators to translate entire sentences or longer bits of text for assignments in language courses.	22	5	8	3.17
It is obvious when a student has used a machine translator instead of writing the text in the target language.	27	2	6	2.60
I advise my students on how to use machine translators appropriately.	14	4	17	4.31
Even if students use machine translators, they will need good language skills anyway to correct the computer's errors.	35	0	0	1.11

Table 1. Responses to Likert scale questions

Although a majority of respondents (22 out of 35) agreed to some degree that MT was cheating, the weighted average on the seven-point Likert scale was 3.17, fairly close to neutral. Two statements elicited strong agreement according to the weighted Likert-scale averages: 1) "it is OK for students learning foreign languages to use machine translators to look up individual words" and 2) "even if students use machine translators they will need good language skills anyway to correct the computer's errors". There were two statements for which the weighted averages reflected general disagreement: 1) "machine translators will someday be as good as human translators" and 2) "I advise my students on how to use machine translators appropriately".

At the end of the questionnaire, there was a space for respondents to write comments. Eleven respondents took the opportunity to make additional comments, some of them on several different aspects of the issue (all comments are included in the appendix). In the content analysis of these comments, three major themes emerged. The first of these, noted by three of the respondents, is that machine translators do not work equally well for all language pairs; e.g., that Google Translate works better for translations between English and Swedish than between English and Japanese. A second theme, noted by seven of the respondents, was that the acceptability of using machine translators depends on the nature of the task and the level

of the students, echoing some of the previous research that suggested that MT was more appropriate for advanced learners than beginners. A third theme, illustrated in the comments of three of the respondents, was that machine translation is a fact of life and teachers need to adapt, a perspective also found in previous literature.

These results were presented at a meeting of the language department at which approximately 30 teachers were present. Following the presentation, the teachers broke into smaller groups for a 30-minute discussion of the results before returning to the large group to share reflections. Although the questionnaire results indicated that a majority of respondents felt that MT was cheating and they would prefer if their students would not use it, few took this stance in the group discussion. One exception was a teacher who said that in her sub-department they were planning to ask their distance students to have two web cameras on during exams, one pointing at their face and another at their screen and keyboard so that their activities could be monitored. Several other teachers responded that such measures would not be helpful, as students determined to cheat will always find a way.

The discussion in the groups centered on the belief that it was pointless to expect students not to use MT and focused around the kinds of skills students would need when using MT, and how they could design assignments and exams to practice and assess these skills. Suggestions included a renewed focus on grammar, with a view to correcting the errors made by machine translators, much like the post-editing exercises described in Section 2.3 above. They also discussed re-designing courses to focus on oral communication skills, since the development of audio MT seems to be lagging behind text MT.

## 6. Discussion and Conclusion

The results of the study reflect nuanced views toward the role of machine translators in language learning. In response to the question that initially motivated this study, whether my teaching colleagues thought that using MT was cheating or not, the answer appears to be “somewhat”.

The study did produce some interesting apparent contradictions. The first is that although a majority agreed with the statements “I would prefer if my students did not use machine translators when they write assignments” and “It is cheating to use machine translators to translate entire sentences or longer bits of text for assignments in language courses”, and many of the comments

indicated that the acceptability of using the technology was highly context-dependent, fewer than half advise their students on the appropriate use of the technology.

The second contradiction is what while the group was near neutral on the statement “if my students use machine translators, it will take them longer to learn the target language”, they unanimously agreed that students would need language skills anyway in order to correct machine translators’ errors. This is reminiscent of some of the studies outlined in section 2.2 above, which argued that MT produces poor results, while simultaneously presenting it as a threat to learning (e.g. Harris, 2010). It would seem that a bigger threat to language learning from the MT-as-cheating perspective would be high-quality machine translation, since that would be much more difficult for teachers to identify and provide fewer teaching opportunities; e.g., post-editing exercises.

What implications, then, do the teachers’ views on MT have for the personal learning environments of their students? A number of the write-in comments on the questionnaire were indicators of the “disturbances and conflicts but also innovative attempts to change the activity” to which Engeström (2006, p. 28) refers. One of the comments from the teachers in the study is a clear illustration of how MT is one of a number of technologies affording changes in the process by which texts are created, requiring some kind of change in teaching practices, as noted in section 2.4 above:

[A colleague] at a department meeting said that for the students of the future it is so completely normal to use Google Translate that they don’t even understand that they can’t do it during an exam in French; in the same way, [another colleague] said that certain contemporary authors work together with, for example, a blog, a Wikipedia article, or through Google Docs: what you write, what I write, everything is blended together into one text. So these modern students don’t understand that we require them to cite properly, and not just reformulate, copy/paste others’ texts, etc. The question is, then, HERE, at the university, is that OK? Is it OK that you and I write together with some copy-pasting of someone else’s text that we run through Google Translate? Or is it OK in general but not at the university? At the same time, how can one PREVENT students from using Google Translate in language courses?

Returning to Wertsch’s (1981) division of activities into three levels—operation, action, and activity—it would appear that there is more at stake here than new course content and different kinds of assignments, which would be at the level of operations. The quote above suggests that educational institutions may have to reconsider the purposes of their

courses and the degree to which new ways of creating text and using language outside the classroom are incorporated into curricula. Language students' ability to create texts and engage with authentic language materials may mean that opportunities for learning outside of institutional frameworks—which have, of course always existed—become more numerous and self-evident, which does not necessarily render educational institutions obsolete, but may change what students need and expect from them. A question for further research, then, is what students see as the role of teachers and formal education in a context where the independent exploration of one's cultural and linguistic interests, and active participation in target language communities early on in one's learning trajectory, is facilitated by technologies which are becoming increasingly ubiquitous.

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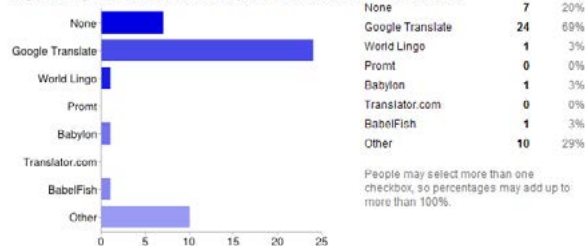


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## Appendix: Questionnaire Results

Do you use any machine translators or computer based dictionaries? If so, which ones?

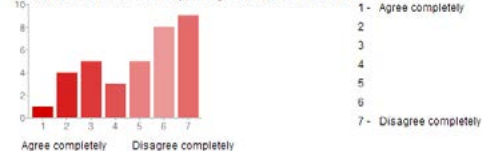


Machine translators produce poor translations.



Average: 2.94

Machine translators will someday be as good as human translators.



Average: 4.91

Machine translators are a tool to help human translators save time.



Average: 3.11

Machine translators are a good tool to help people communicate when they lack a common language.



Average: 2.97

Machine translators may encourage people to try communicating in a new language.



Average: 3.57

I would prefer if my students did not use machine translators when they write assignments.



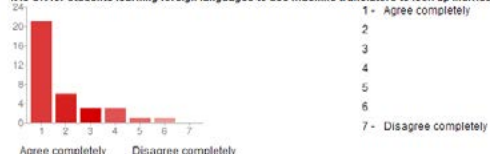
Average: 3.03

If my students use machine translators, it will take them longer to learn the target language.



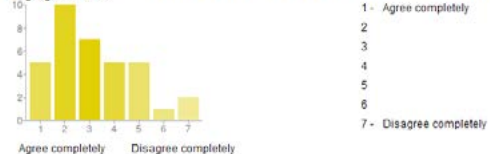
Average: 3.88

It is OK for students learning foreign languages to use machine translators to look up individual words.



Average: 1.86

It is cheating to use machine translators to translate entire sentences or longer bits of text for assignments in language courses.



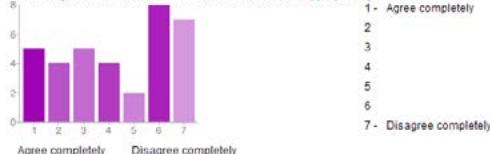
Average: 3.17

It is obvious when a student has used a machine translator instead of writing the text in the target language.



Average: 2.60

I advise my students on how to use machine translators appropriately.



Average: 4.31

Even if students use machine translators, they will need good language skills anyway to correct the computer's errors.



Average: 1.11

## Additional Comments:

1. I just wanted to add that it really depends on the language and the level of the student's proficiency. For example, Google Translate works quite well between Swedish and English, but not at all between Japanese and English.
2. I can't really say that machine translators produce "poor" translations, it really depends. If you are going to write a simple sentence from Swedish to French, for example, at the beginner level (the cat is black), then it works very well. If one has more difficult words or longer paragraphs, however, it does not always work so well. I can, however, imagine that certain language combinations work better than others: English/French probably works better than Swedish/French. Maybe that's not true, if many Swedes work for Google Translate (I don't know if it's true, but certain well-known programs were developed by Swedes, like Skype and Spotify, and many computer games too, so maybe they work hard with Google Translate).
3. Also depends on the distance between the languages. Between Swedish and English, it works rather well, but between English and Japanese, for example, the translation is quite unnatural and it is hard to say whether it could be any better than students' translation.
4. For the beginning level students, I don't recommend it as they are not yet able to point out errors in the machine translation. For upper level students, I don't have any problems if they wisely utilize such technology.
5. The answer to question 9 [cheating] depends very much on the nature of the assignment.
6. It is a bit difficult to answer the questions because HOW one makes use of these tools is completely dependent upon the kind of course in question. It depends on the course content and goals whether the tool is appropriate or not. However, it is important to always take them into account in a course instead of categorically calling it cheating to use them without problematizing that.
7. If a person writes a very interesting analysis in Swedish on a literature question, and the answer itself is worth a VG, but they should have answered in English or French, or if they run their answer through Google Translate, then one can just hire a professional translator, really, but then the question is how much the language is weighted in the grade.
8. The purpose of an exercise/assignment can vary, which makes it so that something that is a good working strategy in one situation is bad in another. Machine translation can be obvious cheating in a certain test situation, but not in another type of examination. Etc. etc.
9. In the question "It is cheating to use machine translators to translate entire sentences or longer bits of text for assignments in language courses" the answer can be between 1 and 7 depending on the purpose of the assignment.
10. The question about cheating depends a lot on the context. Naturally, it can be cheating to use such tools for assignments where the point is not to have any study aids, but if that is the case then one can say that the teacher has created inappropriate assignments.
11. The students are going to use the tools no matter what!
12. We have to accept that these tools exist and adapt our way of working to them. The advantage in having these tools today is that we can use authentic material in our teaching to a much greater extent, even at very low levels.
13. [A colleague] at a department meeting said that for the students of the future it is so completely normal to use Google Translate that they don't even understand that they can't do it during an exam in French; in the same way, [another colleague] said that certain contemporary authors work together with, for example, a blog, a Wikipedia article, or through Google Docs: what you write, what I write, everything is blended together into one text. So these modern students don't understand that we require them to cite properly, and not just reformulate, copy/paste others' texts, etc. The question is, then, HERE, at the university, is that OK? Is it OK that you and I write together with some copy-pasting of someone else's text that we run through Google Translate? Or is it OK in general but not at the university? At the same time, how can one PREVENT students from using Google Translate in language courses?
14. I use machine translators but I notice that I must correct the texts.

15. If one works as a translator and chooses to use Google Translate, that's one thing. But as a teacher I don't want to set a grade on Google Translate's language performance. As a translator one can of course use Google, a dictionary, books, neighbors and parents, but as a student, if one uses all of these supports it isn't fair to get a grade for the language.
16. There is a big difference between using a machine translator to find one word and trying to translate an entire text.
17. "It is obvious when a student has used a machine translator instead of writing the text in the target language." Depends on how good/bad the students' own translations tend to be.

## Mobile Informal Language Learning: Exploring Welsh Learners' Practices

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Mobile devices have great potential in supporting language learning, through providing access to vocabulary, lessons and resources, and supporting interactions with other speakers. There may be particular advantages, however, in using such technologies for learning minority languages.

Welsh is a minority UK language spoken by around 611,000 people in Wales and there is considerable interest among adults in Wales and from Welsh families in learning Welsh. However the small numbers of speakers and their uneven distribution make it difficult for learners outside Welsh speaking “hotspots” to hear and practice Welsh.

Mobile learning therefore has great potential for Welsh learners by providing resources wherever the learner is and by supporting web-based learning communities. The study reported here investigates whether this potential is being exploited in practice. It employed interviews and a small survey to study the practices of Welsh learners at all levels. It was found that learners used mobile technologies widely, to access a wide range of resources, although not always on-the-move, and also that many were using courses, in particular one online course. Learners' practices in using digital technologies for their Welsh language learning are discussed, and also the implications for both learning other minority languages and for informal mobile learning more generally.

### Tags

informal language learning,  
mobile, Welsh

### 1. Introduction

Language learning often takes place over a long period and encompasses both formal and informal approaches as learners seek to maximise their exposure to their target language. Over a period of time, language learners may well study different kinds of courses, including traditional ‘classroom’ courses, self-study courses and online courses. More recently these offerings have been added to by language learning apps e.g. Busuu and Duolingo which often involve communities of learning and can be accessed online and/or downloaded on to mobile devices such as smartphones or tablets, as well as numerous other language learning resources available via websites.

In recent years there has been increasing interest from researchers and teachers in how mobile devices can support language learning (see, e.g. Godwin-Jones, 2011 and Kukulska-Hulme, Norris and Donoghue, 2015) This paper considers how digital technologies, in particular mobile technologies have the potential to support informal language learning practices, focusing on a case study of Welsh, a minority UK language.



Welsh is a regional minority language in Britain, spoken by around 611,000 speakers. Wales has 3 million residents and currently Welsh, once spoken widely across Wales, is now only spoken by around a fifth of the Welsh population, and so is a minority language that is considered endangered by UNESCO. For some learners Welsh may be a heritage language: it has been spoken by previous generations in their family, and so learners may have some familiarity with it. However, with a small number of widely distributed speakers it can be difficult for learners to hear and practice Welsh. Hence, for learning Welsh, digital resources, which can help learners to transcend geographical limitations, may be particularly important. In this paper the focus is on the use of technological resources, particularly mobile devices, to support self-directed Welsh learning.

There is currently considerable interest in endangered and minority languages. Indeed it has been argued that the loss of language diversity is as problematic as the loss of species diversity (Turin 2012), as languages carry with them important cultural and social knowledge (e.g. the uses of plants for medicinal purposes can often be inferred from their names). Although the paper focuses specifically on a study of practices in learning Welsh, the implications for other minority languages are considered in the discussion section, as are the implications for informal mobile language learning more generally.

## 2. Informal language learning with mobile technologies

Although there are different definitions and understandings about informal learning in the literature, (Jones, Blake and Petrou, 2011) for the purpose of this paper informal learning is viewed as learning that takes place outside an institution (such as a school, college or university); without a teacher and without that learning being assessed. In recent years it has been argued that the distinction between different types of learning (e.g. formal, semi-formal and informal) is breaking down in many areas, not just in language learning and that mobile devices such as smartphones may bridge this gap and support continuity between formal and informal learning (see, e.g. Cook, Pachler and Bradley (2008). There has also been an increase in research into mobile informal learning more generally and Sharples (2013) reviews this research and practice and also notes the challenges. In the specific area of language learning, Lai and Gu (2011) note that “successful language learners often attribute

their achievements in language learning to active engagement with the target language beyond the classroom” (p.318).

Mobile devices can support learners in their language learning endeavour by providing access to resources wherever the learner happens to be. Such language engagement might include, for example, using chunks of spare time for practice or looking up vocabulary in relevant contexts or interactions on social media.

Literature on mobile-assisted language learning has largely been dominated by accounts of project implementations, pilots and trials, as noted by Burston (2013), mainly within formal education settings. Recently there has been increasing interest in understanding how students create personalized learning experiences outside the classroom and how they experience mobile learning (e.g. Kim, Rueckert, Kim and Seo, 2013; Gikas and Grant, 2013). This is in partly because of an increasing recognition of the extent of informal language learning and its importance: for example a positive association between informal learning and language gain is reported by Gan, Humphries and Hamp-Lyons, (2004).

One line of research has investigated how mobile language learning might supplement and augment classroom based learning, often focusing on learning English. For example Chen and Li (2010) developed a Personalised Context-Aware Ubiquitous Language System (PCULS) to teach English vocabulary to high school students. They report that using context-aware techniques tailored to the learning environment and content to support memorising English vocabulary via mobile devices was successful in improving English vocabulary. Researchers have also reported on mobile blogging as an out of class activity, e.g., to support the L2 English cultural and linguistic integration of Chinese university students in the UK (Shao, 2011) and to connect up L2 Spanish learners visiting Spain, allowing them to share experiences with other students on the same UK course (Comas-Quinn, Mardomingo, and Valentine, 2009).

Studies have begun to emerge reporting research into learners’ own self-directed practices with technology. For example, in a study cited by Lai and Gu (op. cit.), Zhang (2010) investigated Chinese EFL learners’ use of technology for language learning and found that although her learners made limited use of technology for their language learning, songs and films were used most and Web 2.0 resources least. Lai and Gu’s investigation of learners’ technology use found that students used technologies more outside the classroom than inside. The students used

a variety of technologies and their use included monitoring and evaluating their learning, increasing their motivation and seeking help from native speakers. However, Lai and Gu do not report on the extent to which mobile technologies were used.

A recent empirical study in the UK reported on the emerging mobile learning practices of adult distance language learners, across both formal and informal settings, who were learning a range of languages independently (Demouy et. al., In Press). It included a large survey which focused on the students' current practices and behaviours. The most frequent activities were watching videos and listening to the target language whilst the most popular resources and apps included reference material such as dictionaries and online translation tools. Language learning websites and apps, authentic audio-visual and reading resources were also frequently used by the students. Mobile devices were used for language learning both in planned sessions and spontaneously and most students believed that their mobile devices allowed them to study at times and in places that they otherwise would not have done. One reason these students used their mobiles was to use small gaps in their schedules, which would otherwise be 'dead' time. This might include daily commutes or lunchtimes at work, and it added to the time available for their language learning.

The EU funded [MASELTOV](http://www.maseltov.eu) project ([www.maseltov.eu](http://www.maseltov.eu), 2012-2015) developed services and apps, collectively known as MApp, on smartphones to help support immigrants' integration into their new European cities. One of the MApp tools consisted of English language lessons to support informal and incidental learning in context. Additionally a forum provided social support and a place for peer comment and practice. These tools were used in a field trial in a UK city, Milton Keynes, by 17 participants from Spanish speaking South American countries. Results indicated that the language lessons on the smartphone supported the participants' English language learning by being available when needed; enabling vocabulary look up, help with phrases of personal interest and practice of different skills – in particular reading, listening, speaking and supporting particular situations: e.g. going to the doctor's, making bank transactions or catching a bus. Further details of the findings can be found [here](#).

As Gaved, Greenwood and Peasgood (2015) note, MApp works best where there is a high quality network connectivity – and this is not always available when mobile learners are out and about. A recent project, SALSA (Sensors and Apps for Languages

in Smart Areas) has therefore been investigating the provision of location-specific language learning activities in the context of a smart city, that does not require such connectivity but uses Bluetooth beacons, see Gaved, Greenwood and Peasgood (op. cit.)

These studies indicate the potential of mobile informal learning and some report on the positive benefits of having language learning tools available anywhere so that learners can use them as they go about their daily lives. However, as noted, most studies report trials of apps or software developed for particular projects, and often connected to formal language courses. There is still a paucity of research into learners' independent practices in pursuing their informal language learning. In the context of Welsh, as argued above, digital resources, especially when mobile, have the potential to at least partly overcome the particular challenges of learning a language with a limited number of dispersed speakers. Such challenges are also likely to apply to other minority languages. The next section considers the literature on learning Welsh and the resources available to Welsh learners.

### 3. The Welsh learning context and resources for Welsh learners

The literature on learning Welsh is relatively sparse. Baker et al. (2011) provide the context on formal adult education provision for Welsh learners in Wales and report on the rise in Welsh learners at adult Welsh centres in Wales, as well as their motivations and expectations. Trosset (1986) reports on an early study of Welsh learners, which unusually took an ethnographic approach and argued for the social nature of language learning: "... to learn a language is to enter a community of people who speak it. There are many aspects of language learning that exist not in the cognitive processes of learners, but in the social relationships developed between the learners and the members of the speech community which they seek to enter." (Trosset, 1986: 165.)

Despite massive growth in online language courses and apps, few include Welsh. One that does and which is a notable success in terms of the number of learners is [SSIW](#) (Say Something In Welsh) with 30,000 participants having signed up for courses. It includes:

- Three online courses (so far) with conversation-based lessons

- A forum
- A weekly newsletter
- An online Eisteddfod (a Welsh festival of literature, music and performance)
- “Bootcamps” where learners meet up face to face for intensive speaking practice
- Local meetings

SSIW is a hybrid online/offline language course and community. As learners are largely based in one country, face to face meet-ups and “Bootcamps” (intensive language learning weeks) are arranged. The combination of online and offline opportunities offers:

1. A means of socialising into a new community.
2. Communication with a wide range of peers (who may be widely distributed)
3. Speaking practice in authentic real life situations

Eight participants in the study described in section 4 were using SSIW to learn Welsh. Other Welsh digital resources are available for learners, and there are also resources available for and produced by native Welsh speakers.

A number of researchers have investigated the use of Welsh in social media. For example, Cunliffe, Morris and Prys (2013) report on how by young bilinguals use Welsh and English on Facebook, and found that language use online is largely determined by home use: it is an extension of everyday language. They found that for most participants their Facebook community resembled their real life community. In North West Wales, where most participants speak Welsh at home, both languages were used, with Welsh commonly used, whilst it was not as frequently used in the South East. The authors suggest therefore that Facebook could play an important role in maintaining Welsh networks. In another study Johnson (2013) investigated the use of Welsh by bilingual Twitter users and how this varied according to their presumed audience. He found that just under half used Welsh, and where a Welsh audience was in mind, the norm was Welsh. So it seems that Welsh is well represented in the use of Facebook and Twitter.

For many learners, however, Welsh Facebook might be a bit daunting, and too difficult, although Twitter is used for Welsh learning by SSIW who set a word a day game/challenge.

However, resources specifically for learners are freely available including the BBC<sup>(i)</sup> [‘learnWelsh’ website](#), and programmes for learners from the Welsh television broadcasting company S4C: the current series is called [Dal Ati](#) (Keep At It) which replaces a series aimed at beginners, Hwb, mentioned by several participants. Other freely available resources for learning Welsh can be easily found. A recent simple Google search, using the terms Welsh learning resources returned 1,200,000 hits at the time of writing – although many of these won’t be freely available.

## 4. A case study on using digital resources for informal Welsh learning

Despite increased interest in the advantages in using digital technologies for informal language learning, there is a paucity of empirical evidence on the extent to which such potential is being realized. This project therefore aimed to research the use of digital technologies for supporting Welsh language learning, with an emphasis on informal learning, through investigating existing practices. The research questions were:

1. What use is made of digital technologies and resources to support informal Welsh language learning?
2. How do learners use such resources to support their learning?

### 4.1 Methods and participants

The study employed interviews and a small survey to study the practices of learners at all stages of their language learning. Interviews were chosen as the intention was to uncover practices and thus this method was appropriate as it allowed the exploration of such practices, and provided a learners’ perspective. The interview schedules were partly based on the research of Kukulska-Hulme and de los Arcos (2012) on using mobile devices for informal language learning in order to be able to compare data. Participants also completed a small survey to provide information on their background, language learning experience and expertise. Initially, the author asked for volunteer participants at the [Welsh National Eisteddfod](#), a Welsh Arts festival. The Eisteddfod includes a ‘Learners’ Area’ where the author gave a short talk on the role of blogs in learning Welsh. Further potential participants were obtained via contacts who were teaching Welsh and via two Facebook groups on learning Welsh. Thirteen participants took part in

interviews; either face to face, or more frequently by phone, which lasted between 40 and 90 minutes.

## 4.1.1 Analysis approach

The interviews asked about participants' use of digital technologies, including mobile devices, to support their Welsh learning. Their use of social media has been reported elsewhere (Jones, 2015) and so is not the focus here. A thematic approach was taken to analysing the interview transcripts (Braun and Clarke, 2006) in which the transcripts were scrutinised for emerging categories, producing a long list which were then re-evaluated and reduced to provide a small number of themes. The themes that emerged from the analysis of interviews have been drawn on to address the research questions.

## 5. Findings

There were thirteen participants: seven women and five men. Three classified themselves as beginners (B); two as beginner/intermediate (B/I), two as intermediate (I) and four as experienced (E). Three of these experienced learners taught others Welsh.

### 5.1 Learners' practices to support their informal Welsh Learning

Learner	Level	Reading	Speaking	Writing	Listening	SSIW
1 Jane	I		✓	✓	✓	
2 Catrin	I	✓	Limited	✓	✓	
3 Tina	B/I	✓	✓	✓	✓	
4 Paul	E	✓	✓	✓	✓	
5 June	B/I	✓	Limited	✓	✓	✓
6 Sue	B	✓	✓	✓	✓	✓
7 Jan	B	✓	✓	✓	✓	✓
8 Jim	E	✓	✓	✓	✓	✓
9 Mat	B	✓	✓	✓	✓	✓
10 Jon	E	✓	✓	✓	✓	
11 Ann	E	✓	✓	✓	✓	✓
12 Sam	I	✓	Limited	✓	✓	✓
13 Cal	I/E	✓	✓	✓	✓	✓

Table 1: Participants' activities across the four language skills

#### 5.1.1 Speaking

Table 1 shows activities undertaken across the four language skills; the participants' language skill level, as described above,

and who uses SSIW, (see section 3). Six SSIW participants learn with the SSIW course, and Ann uses the materials to support her Welsh teaching. All participants engage in learning and practicing all the skills, but three spend limited time in speaking Welsh. Catrin does not have many opportunities to speak Welsh and does not see technology as helping her with this. June, who lives Switzerland, also comments on the lack of speaking opportunities. All other participants except one have found or created regular opportunities to speak Welsh. The exception, Sam, has access to a conversation group, but has not found much common ground with the group, and so does not attend. Ten participants do speak Welsh regularly: seven of them in face to face situations. Possibly the fact that the three who speak Welsh on Skype are at intermediate or experienced level is noteworthy: Skype may be a more challenging medium for those with less experience, where gestures are not so easily used and interpreted.

#### 5.1.2 Listening: on the move or at home and listening to lessons

Listening to the target language is perhaps the most convenient activity to undertake on the move using mobile devices. However, many participants describe the convenience of moving around the house and learning in different locations at home, rather than out and about, as Sally notes in talking about using her tablet for SSIW lessons:

*Well it is portable so whatever I am doing I can listen to the lessons. I can be washing up, ironing, sitting, knitting.... I can be in the kitchen and I don't have to take a big laptop. It .. gives me the ability to learn Welsh wherever I am at home.*

The focus of the interviews was on informal Welsh practices: i.e. activities that were not part of formal courses. However, all participants had taken courses at some point and eleven were taking courses at the time of the interviews: six were mainly learning through taking an online course, SSIW (Say Something In Welsh, see section 3) and a seventh was using it to support her teaching. SSIW learners downloaded the course onto their smartphones, iPads or listened to it whilst they were travelling, or at home - often whilst they did household tasks. Three learners also used [Cadw Sŵn](#), described as "a complete Welsh course which uses music and stories to support the learning process"<sup>1</sup>. [Memrise](#) was also used.

<sup>1</sup> The website says: Cadw Sŵn is a complete Welsh course which uses music and stories

Not surprisingly, what resources were accessed and how they were used, depended on language level. Nearly all participants listened to Welsh radio, allowing them to access authentic materials and to hear Welsh spoken at normal speed. Although learners at beginner or intermediate level could not always understand much, they saw exposure to the language as helpful. Catrin, who listened to Welsh stories on her MP3 player said:

*I will happily sit with earphones in my ears hearing someone reading me a story. Even if I am barely following it, the language is still flowing over me...*

Indeed, not understanding the radio meant that some learners were happy to have it on at work, because they would not be distracted:

*I listen to Radio Cymru as a background on the laptop too. At the moment I don't understand enough to get distracted by it. (Matt)*

Participants also described how different levels of Welsh can serve different purposes. For example, Cal describes how he understands conversation in a lighter chat programme when he listens in the car, using his phone, during his 15 minute commute between home and work:

*On my phone I pick up the internet radio .... I get the news and then a bit of chat, they bring school children on and that is brilliant because I can understand that. They don't speak in whole sentences but use words ... that I know.*

However, he listens to the news for a different purpose as he does not understand it:

*...the news is technical it is political and I get lost, so I do that simply to train my ear and hear the rhythm.*

Another aspect of mobile learning is that it can be timely: learners can start when they are motivated and really want to do it. Matt explained how learning Welsh started for him: *I was in Blaenau Ffestiniog a year ago on my own and I found and downloaded SSIW whilst I was there. Also I found a centre that supported Welsh activities and provided cultural; opportunities and attended a drop-in class*

## 5.1.3 Reading and writing

Given that many participants focussed on conversational Welsh, it is perhaps surprising to see that reading and writing featured for everyone, including beginners. For many, this consisted of writing and receiving emails, text messages and/or tweets; hence the reading and writing was in quite small chunks. However, more experienced learners reported extensive use of digital resources to support their writing, in particular those participants who were trying to live much of their lives through the medium of Welsh. Paul describes how he uses technology to do this as much as possible and searches for Welsh applications:

*... I'm struggling to find welsh applications so largely it's a matter of texting and (Welsh) Facebook. On my desktop I have windows in Welsh, and I have a Mac laptop and a Smartphone. I use Welsh whenever I can: it's a good way of broadening vocabulary. The frustrating thing about using Macs and Apple is it doesn't have as much for the language. I use the Microsoft interface in Welsh and all applications in Welsh (Excel, Outlook). They work exactly like the English – it is a matter of becoming familiar with the Welsh language terminology used*

## 5.1.4 Multi-Tasking, being opportunistic and planning

As reported elsewhere (e.g. Kukulska-Hulme, 2012), participants reported multi-tasking and using unexpected small periods of time to do their Welsh learning. For example Catrin noted *... and if I am waiting outside in a car park to pick [the children] up, I think 'oh, I'll just listen to something now'* This use of spare time that arises is not planned, but as learners had their devices with them they could use them if an opportunity arose. So Catrin listened to Welsh stories in the bath and Sam listened on his phone whilst cooking. In addition to such spontaneous language learning activities, there were also many planned activities. These included activities for travelling time: hence podcasts, stories, lessons and the radio were listened to whilst walking, driving and on the train and bus, or doing activities at home that did not require their full attention. Matt, learning through SSIW, described how his Welsh learning encompassed both a planned schedule and spontaneous activities.

*At the moment both. I enjoy it so don't need a regular schedule. Twice a month I go to meetings or clubs to talk W and that prompts me. ...there are various prompts such as needing to drive somewhere, or "by Friday I need to ...". When I run out*



*of steam I may need to change my approach. My goal is to get through the course. There is a final lesson that tests everything. I want to then do course two and perhaps three.*

## 5.1.5 Helping others and creating resources

As can be seen from table 2, an extensive number of resources was used. Indeed one of the participants, (June) already fluent in three languages, commented:

*Welsh is the only language I know that has so much material online.*

Whilst beginners often gave examples of using digital technologies to listen to and view Welsh, the more experienced learners, such as Paul above, drew on digital technologies to support more complex tasks or to help them to support other learners: two participants were teaching Welsh and Jonty was supporting Welsh learners in England through a Facebook group, publications and newsletters and running workshops for learners:

*I also use Google circles and have gone to the SSIW group meetings – the hangouts which are very interesting. ...Through the publicity and through SSIW, we have attracted learners from Manchester, Sheffield and of course Jed [pseudonym] from Norwich. Now there is also a group in Solihull and Leeds. ....The Welsh site is really a blog... and there is a real blog as well: Llais y Dderwent. Once a month I update it and use it to put up forms about the workshops.*

Ann comments on how she uses digital resources for her teaching:

*I plan my lessons on here,[the desktop] and I keep my files. I read the news on the BBC website. .... I send emails out mainly from the desktop because I have a really nice Welsh spell checker that is built in.*

...

*I ... downloaded the language lab from Microsoft because that will work on email.... I've put the Facebook page into Welsh so the spell checker works on that. If I used Facebook when I was writing my blog that would pick up the spellchecker on the computer...whereas if I opened the blog up in FireFox it would use the Microsoft spellchecker which is really odd ... The Keyboard is a Welsh one because there are keystrokes for the accents...*

Both Ann and Jonty refer to blogs that they write or have written. Ann stopped writing hers once she started spending time teaching and Jonty uses his to support learners and to inform them about activities in the local Welsh learners' group. Paul, another participant who is now teaching, talked about how he collaborated with a friend and colleague to develop digital flashcards for learners.

Table 2 shows the digital resources used by the participants and also indicates the extent to which they make use of mobile devices, and if so what resources they use:

Participant	Mobile	Digital Resources used
1 Jane	Podcasts,Flashcards	Dictionaries, school website, translation app, S4C website <sup>1</sup>
2 Catrin	CDs in the car	Memrise <sup>(2)</sup> , S4C <sup>(3)</sup> , Facebook, CadwSŵn
3 Tina	Watching TV on the iPad, welsh music	Cyw, S4C, BBC website resources, BBC Catchphrase resource
4 Paul	Looking for ways to use Smartphone in Welsh, texting	Catchphrase, Big welsh challenge for learners , Welsh blogs (for reading)
5 June	SSIW lessons downloaded onto MP3 player for use on the move	BBC Learn Welsh website, SSIW, Welsh radio, S4C, stories, films.
6 Sue	SSIW lessons downloaded onto tablet for use at home	SSIW, Welsh radio, Welsh TV programmes, particularly Hwb <sup>(4)</sup>
7 Jan	SSIW lessons on tablet for use at home, mobile for texting in Welsh	SSIW, S4C, particularly Hwb
8 Jim	Laptop for SSIW lessons and practice	SSIW, Welsh radio, S4C, facebook for Welsh groups, twitter for SSIW daily word, Skype
9 Mat	Mobile for SSIW lessons whilst driving, on train or whilst walking	SSIW, Welsh radio, Google translate, Facebook,S4C, Hwb.
10 Jon	Welsh music on CD player in car and Welsh radio from pub car park	Welsh twitter, Facebook, blogs, BBC Catchphrase <sup>(5)</sup> , Y Bont <sup>(6)</sup> , Skype
11 Ann	Resources for teaching on smartphone and ipad	Golwg360 <sup>(7)</sup> , y Bont, Youtube, SSIWiPlayer, S4C, Clic, SSIW, Facebook

12 Sam	CadwSwn and SSIW on iPad, also S4C on iPad/iPhone	CadwSŵn, S4C, Hwb
13 Cal	Welsh radio in car travelling to work	SSIW, Welsh radio, Google translate, S4C, Hwb, CadwSŵn

Table 2: mobile digital resources used by the participants

## 5. Discussion and conclusions

The findings from the study have shown that participants use digital technologies, including mobile technologies to support all the different language learning skills and practices. However, the use of digital and mobile technologies does not support all skills equally: some participants, especially beginners, prefer to speak face to face. Listening is a favoured and convenient activity that can be fitted into and around busy everyday schedules and it can be done whilst doing other tasks. What was surprising was that six participants were learning using the conversational Welsh course Say Something In Welsh, although some were also using other courses. Which resources participants used depended on their level. Beginners would choose to listen to the Say Something in Welsh lessons, or to other resources aimed at beginners: however, some would also have the Welsh radio on in the background so that they could become familiar with the rhythm and sound of the language.

Participants really valued their mobile devices which allowed them to learn where and when convenient. For many this was within the house, or in the garden, where they combined their learning with other tasks. Some, however, did use their mobile devices whilst travelling.

The learners varied considerably in how their technology use supported their reading and writing, with experienced learners using sophisticated software to help check and edit their work, sometimes for other learners, and doing some extensive writing (blogs or newsletters) and even creating resources. However,

(2) an online learning tool with courses created by its community for teaching languages

(3) S4C is a Welsh-language public-service television channel broadcast throughout Wales.

(4) Hwb is a Welsh channel TV programme for learners

(5) Catchphrase is part of the BBC LearnWelsh site, offering free downloadable audio and text learning. Archived material available at <http://www.bbc.co.uk/wales/catchphrase/>

(6) Y Bont (The Bridge) is an extensive digital collection of courses, exercises, games and other resources, gathered together and produced as part of Wales' adult learning programme.

(7) A Welsh digital news and information site

even beginners talked of using emails and twitter – and these seem to provide good practice in reading and writing in short chunks. It seems that the combination of the wide availability of resources (much of it free), and being able to access these anywhere (even if learners don't always choose to do this) makes learning Welsh a realisable activity for those who want to do it. In summary, the study showed that:

- Listening is a key activity
- Reading and writing are also core activities, including at beginner level where learners often used tools such as micro-blogging or texting suggesting that creating and reading short texts can play a useful role in language learning. Experienced learners wrote larger pieces of text such as blogs or newsletters
- Mobile learning allowed the use of spare time and multi-tasking and supported a pattern of learning that was often both spontaneous and planned
- Participants moved between informal and formal learning practices
- Mobile devices were often mainly used at home

What are the implications of this for other minority languages? As one participant noted, Welsh is well resourced. However, other minority and endangered languages have also received considerable interest in recent years, including how they 'fit' into the digital age. Fifteen years ago, Crystal (2000) noted new opportunities emerging for media production and consumption in minority languages: "An endangered language will progress if its speakers can make use of electronic technology" (Crystal, 2000, p141). Since then there have been numerous examples of how minority languages are represented in the digital age. These include community led initiatives such as Tura Aruturá's use of Irish language raps for teaching Irish (see <https://www.youtube.com/watch?v=n0sCindkvq4>), and corporate initiatives and partnerships. Google's partnership with the Alliance for Linguistic Diversity, (see [www.endangeredlanguages.com](http://www.endangeredlanguages.com)) and the provision of a version of Windows8 in Cherokee are two such examples. Turin (2012, op. cit.) reports on how projects in the US, UK and the Netherlands include collaborative work with minority language communities.

Language learners are creative and opportunistic in finding and using digital resources for their informal learning (Demouy et. al., op. cit.). It is also clear from the study reported here

that learners do not only engage in informal learning or formal learning. The criteria for participants included being engaged in informal Welsh learning supported by digital technologies. However all the participants had at some point taken formal courses. So learners make use of what they can to support their language acquisition.

Although this sample is small, which is a limitation, the types of practices that learners engaged in, is similar to that reported in other studies, including Demouy et. al's large scale study (Demouy et. al., op. cit.) and Kukulska-Hulme, 2012). Understanding more about learners' mobile pedagogies and their challenges and successes can inform designers of language learning apps for mobiles as well as designers of language learning courses. For example, Kukulska-Hulme, Norris and Donoghue's recent guide to mobile pedagogy for English teachers drew on the experience of both learners and teachers who made use of mobile learning (Kukulska-Hulme, Norris and Donoghue, 2015). By continuing to investigate learners' mobile pedagogical practices, it is hoped that our understanding can contribute to supporting future language learners, whether they are learning minority languages or not.

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## Multilingual CALL: More than just translation drills?

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The contribution introduces two projects which specifically address multilingual CALL. LIKE studies how monolingual and multilingual children interact with multilingual multimodal stories. MElang-E develops a gamified language learning platform in which language learners can experience English as a lingua franca, using diverse linguistic resources and code-switching.

### 1. Multilingual CALL

In most discourses about language learning, multilingualism is viewed as the consequence of language learning. A monolingual person receives formal language instruction and thereby becomes a user of two languages. The learner's skills in other languages - plurilingual learners, learners who have previously studied languages – are not usually considered.

The amount to which the school language is used in addition to the target language waxes and wanes through history with the change in teaching trends – it certainly played a larger role in grammar-translation based teaching than e.g. in audio-lingual method-style teaching, or in today's communicative language teaching. Many teachers pride themselves specifically on avoiding using the school language at all, or using it only when absolutely unavoidable, e.g. for some grammar instruction (Butzkamm 1973).

Additional languages occasionally feature in modern textbooks, either as a means to practice mediation, as mnemonic for vocabulary learning (pointing out cognates), or even in explicit comparison, most typically between closely related languages, e.g. in the Romance family group. Tertiary language didactics looks specifically at how to build on previously learned languages.

Of course, not only formally studied languages have the potential to impact language learning – those languages plurilingual individuals acquired outside of formal school lessons should not be ignored, either.

Little of this has arrived in CALL, though. Histories of trends in CALL, such as Bax (2003) do not even address multilingual practices. Hanson-Smith (2003) asks how CALL can prepare people for multilingualism – but not how multilingualism impacts CALL. As the author has shown for language learning communities (Buendgens-Kosten 2014), some communities automatically assume that learners are monolingual. Instead of celebrating the co-existence of diverse linguistic resources, they stress the privileged access they give to native speakers. Exercises in more than one language exist – but are usually limited to translation practices either for the sake of the learner (such as in Duolingo, <http://www.duolingo.com/>) or for the sake of other community members, usually native speakers of the target language, who will provide feedback on the target language texts (such as at Lang-8, <http://lang-8.com/>). Telecollaboration projects and reciprocal language learning online (e.g. e-tandems)

cannot avoid being multilingual, but language choice and code-alternation are often strongly regulated.

This paper will introduce the reader to two ongoing CALL projects that aim to go beyond this status quo by explicitly addressing existing multilingualism in its diverse forms, and by moving away from projecting the image of the learner-as-monolingual-person.

## 2. Receptive code-switching & multilingual CALL: Project “LIKE”

Stories are an important element in many language learning classrooms, especially at the elementary level. Often, these stories are presented in the target language only. The MuViT software (“Multilingual Virtual Talking Books”, Elsner 2011) is a CALL tool that allows young learners to encounter a story in multiple languages: English, German, Spanish, Russian (Cyrillic and Latin alphabet versions), Turkish. Children can listen to these stories, read them themselves, and change between language versions at every ‘page’. They are free to read the story in only one language, to read it multiple times, each time in another language, or to switch between languages as many times as they wish. Exercises with a focus on language awareness accompany the stories. As storytelling is already part of many elementary school language classrooms and the multilingual stories in MuViT do not require specific language skills from the teacher, these multilingual stories can – necessary infrastructure provided – be integrated fairly easily into the language learning classroom. Ideally, a small number of children share one computer, allowing them to discuss story content and story languages among themselves.

The ongoing Project LIKE<sup>1</sup> (Elsner et al. 2015; Bündgens-Kosten et al. 2015) uses a modified version of one of these stories to systematically test if providing children with more than one version of the story is beneficial. Children work in dyads, either with a monolingual English version, or a trilingual English-German-Turkish version. To control for effects of dyad composition, both dyads of monolingual German children, dyads of bilingual German-Turkish children, and combined dyads of both monolingual and bilingual children, are used. Very different usage patterns are emerging, from dyads that prefer to work with English only, to dyads that read each story in each

language (often including Turkish, even in dyads of non-Turkish speaking children), to children who switch between languages frequently, either to resolve specific comprehension issues, or for the sheer enjoyment of experiencing different languages (Bündgens-Kosten and Elsner 2014). How these patterns (and other patterns, e.g. relating to negotiation of meaning within the dyad) relate to specific learning outcomes, and if monolingual and bilingual children profit to the same degree, will be among the questions answerable upon project completion.

## 3. Lingua franca & simulated code-switching: Project “MElang-E”

One of the strengths of CALL is that it can present linguistic input in the form of games and simulations. One project that does so is the Erasmus+ project “MElang-E” (Multilingual Explorations of Languages in Europe, [melang-e.eu](http://melang-e.eu)), a gamified language learning product inspired by adventure games. It will allow secondary school students with an English level from A2 to B1 to practice key communicative situations.

In MElang-E, the main character, Mali from Oxford, travels across Europe to find old friends and get them to join him for a Europe-wide band contest. Unlike many similar products, MElang-E does neither present a monolingual world, nor assumes that the characters appearing in it are monolingual. English plays an important role as lingua franca, and players develop a feeling for how English in Barcelona may differ from the English spoken in Luxembourg. At the same time, the players can choose a wide range of other languages, always depending on what character Mali is talking to, i.e. what is sociolinguistically realistic. Even a few greetings in the local language, basic intercomprehension skills, or relying on context and gestures, can help the player navigate the game world. Code-switching is explicitly supported. Extensive teacher materials will encourage the reflection and discussion of these elements in the classroom.

Multilingual games such as MElang-E are, on the one hand, a design challenge. Assumptions about language and language use have to be carefully translated into game play and supported by suitable interfaces. On the other hand upon project completion MElang-E will allow for a wide range of research activities that focus on aspects such as acceptability of such games in the classrooms, language choice and code-switching behaviors of learners, and overall impact on language skills.

<sup>1</sup> LIKE: Bedeutung der L1 (Türkisch) und L2 (Deutsch) für die Entwicklung kommunikativer Kompetenz in der L3 (Englisch) bei mehrsprachigen Schülerinnen und Schülern – Relevance of the L1 (Turkish) and L2 (German) for the development of communicative competence in the L3 (English) for multilingual students

### 4. Outlook

The research on multilingual CALL is still in its infancy. While it can certainly build on the research traditions within CALL and tertiary language didactics, it creates questions and challenges that go beyond these. Receptive code-switching, for example, the practice of changing the input language, could not be meaningfully researched before multilingual CALL products that support the act of receptive code-switching existed. This also means that research on multilingual CALL might often have a design-based research component. In addition, informal language learning practices, especially on the web2.0, may prove to be a rich field for research into multilingual CALL – not because these learning spaces were designed to provide opportunities for multilingual CALL, but because learners have the freedom to actively use multiple languages in their communication and interaction.

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## Massive Open Online Course Mentoring for a Connected Community of Practice of Language Teachers

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The Southampton University/British Council “Understanding Language: Learning and Teaching” Massive Open Online Course (MOOC) attracted a large number of enrolments, including many language teachers. The platform and course is designed to promote social learning at scale. This article reports on the implementation and preliminary analysis of a principled approach to mentoring, which aims to connect participants and foster communities of practice among language teachers.

### 1. Introduction

In recent years, researchers have started to explore the potential of Massive Open Online Courses (MOOCs) to support language learning (Beaven, 2013) and language teacher development (Manning, Morrison and McIlroy, 2014). In 2013, the University of Southampton and the British Council created ‘Understanding Language: Learning and Teaching’ (ULMOOC), a course aimed at both language learners and teachers. The course was hosted in the FutureLearn Platform, a learning environment with social constructivist pedagogical underpinnings (Ferguson & Sharples, 2014). As of October 2015, the course has run twice, and a third edition goes live in the same month. Runs one and two of the course attracted around 30,000 and 20,000 participants respectively, and around half of them posted comments in the discussion boards. Approximately half of the participants who completed the course survey were teachers. The learning community was supported by a mentoring team with expertise in teaching languages and Applied Linguistics, who followed a “mentors as connectors” approach (Leon-Urrutia et al., 2015). The mentors as connectors approach aimed to support the development of a community of practice (CoP) by maximising the impact of mentor interventions in the learning community. The paper reports on the implementation and preliminary analysis of this mentoring strategy.

### 2. Literature review

#### 2.1 Communities of practice

Communities of Practice (CoP) have been defined as a group of “people who share an interest in a domain of human endeavour and engage in a process of collective learning that creates bonds between them” (Wenger, 2001:1). This definition can be applied to the language teaching profession, as theorised by Varghese et al. (2005). According to Johnson (2001) emphasis on social practices and shared goals reveals the theory’s origins in constructivist thinking. Gray’s (2004) summary of significant work on CoP is supported by Li et al. (2009), who identify a shift in focus from “legitimate peripheral participation” (Lave and Wenger, 1991) to a more detailed account of mutual engagement, joint enterprise and shared

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repertoire as the main components of CoP (Wenger, 1998). These aspects of CoP thinking, especially the idea of shared repertoire (shared physical and conceptual resources built up by a community), “distinguish this as a networked learning theory” (Dron & Anderson, 2014:56) and may, therefore, suggest some usefulness of CoP ideas in MOOC development and implementation. Indeed, Bates (2014) claims that MOOCs provide an opportunity for the development of CoP, especially when the course design is oriented to social learning.

The importance of facilitation in online contexts was emphasised in earlier work on online communities (Palloff & Pratt, 1999), and later studies have argued for the applicability of CoP concepts (including that of facilitation) in online learning (Johnson, 2001). Johnson argues that CoP can emerge and foster learning online, but that factors such as cultural differences between participants, preponderance of low-quality comments, and the “fading back or withdrawing” of participants can hinder communication, collaboration and learning. These are certainly problems which have been reported in the wider literature on MOOCs (Jordan, 2014; Clow, 2013; Kizilcec et.al. 2013), so a way to respond to this using mentor interventions was deemed necessary on the ULMOOC.

### 2.2 Mentoring

For the purposes of this study, we do not focus on contested interpretations of the terms mentor, facilitator, moderator, or tutor. We focus rather on the features and implementation of the ‘mentors as connectors’ mentoring strategy as set out in section 3. The roles of mentors in online learning are multi-faceted, and can involve pedagogical, social, technical and managerial elements (Berge, 1995). Salmon’s well known five-stage model (2013) helps illustrate the various aspects of the role, which she calls an e-moderator. In the model, the focus of the moderator shifts during the course through concern with access and motivation, online socialisation, information exchange, knowledge construction, and finally development. However, Salmon’s model was conceived in the context of online courses with far fewer participants and a lower moderator-student ratio of around 1:20 (Salmon, 2004). As a result, the model needs adaptation toward more “light touch moderation” in the context of the large participant numbers in MOOCs (Salmon, 2015:544).

### 3. Mentoring strategies

The FutureLearn MOOC platform architecture and the specific course design are derived from social constructivist principles and prioritise “learning as conversation” (Ferguson & Sharples, 2014). The mentoring approach, therefore, needs to support this function. This reflects a broader recognition of communication and interaction as primary affordances of the Web for education (Anderson, 2008). However, the extremely large number of participants involved in the course limits the potential impact of direct mentor-participant interactions and communications significantly. Attempting to respond to every comment, answer all participant questions, or take a leading or ‘teacherly’ role would be impractical in this context. As a result, the mentoring team focused mainly on social and pedagogical interventions which aimed to enhance connections between course participants themselves (Leon-Urrutia et al., 2015), and ultimately to support development of communities of practice.

The learning design team of this course found the idea of encouraging CoP development on the ULMOOC attractive for several reasons. The social constructivist underpinnings of the platform and course design (Ferguson & Sharples, 2014) are compatible with the supporting concept of constructivism in CoP thinking (Johnson, 2001). In addition, mentor attempts to connect the learning community align well with Wenger’s (1998) key CoP elements of mutual engagement (collaboration through development of shared norms), shared repertoire (developing shared resources), and joint enterprise (sharing a common domain - that of education).

Teachers / educators were the primary intended audience of the course, so mentor interventions prioritised interactions dealing with teaching and learning in the discussion forums, synchronous chat sessions, and review videos. The specific forms of mentor intervention prioritised were as follows:

- Connecting the learning community (encouraging use of ‘likes’ and ‘follows’ and linking in forums; linking between related or complementary participant comments)
- Providing external links to relevant resources (useful videos, webpages, or course materials)
- Fostering learning as conversation (participating in, and building on existing discussions; encouraging replies)
- Encouraging external networks (Facebook groups, Google groups, YouTube channels)

- Producing weekly reviews (short YouTube videos reviewing popular topics, questions or suggestions from each week, referring to participant contributions and including links to them)

The aim of this approach was to enhance levels of interaction in the course, as an absence of interaction can severely limit the effectiveness of online courses (Gašević et al., 2014). In addition, because the focus of the MOOC was (primarily) language teachers, it was hoped that enhancing connectivity between participants could help foster the emergence of communities of practice (CoP). This takes advantage of a distinctive affordance of MOOCs, where large numbers of participants (mainly teachers, in this case) can “engage with new content together” over a particular time period (Gillani & Eynon, 2014:19).

## 4. Outcomes

### 4.1 Course overview

The ULMOOC has run twice, with a third run ongoing as of October 2015. The course had a large number of participants. The first run had nearly 60,000 participants registered, and the second run more than 40,000. In both runs, around half them participated in some way. In terms of social learners (those who actively posted comments / replies), there were nearly 12,000 in run 1 and 8,000 in run 2. Nearly 20% (more than 5,000 participants) finished run 1, and almost 16% (nearly 3,500) finished the second. According to Jordan’s survey of MOOCs which ran in 2013, the average completion rates for massive open online courses was 6.5% (Jordan, 2014).



Figure 1: Interactive map showing participant locations in ULMOOC1

Figure 2 shows those participants who completed a survey in which they stated their profession (n=9859). Approximately half of them reported their profession as teaching and education:

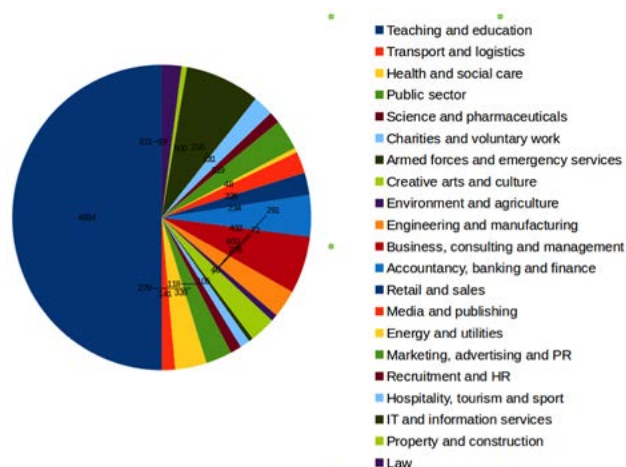


Figure 2: Distribution of participants by profession in ULMOOC1

### 4.2 Participant activity in course ‘steps’

Each week of the course is divided into distinct learning objects called ‘steps’. The materials themselves explored CoP in relation to the ‘social turn’ in language teaching (Mitchell, Myles and Marsden, 2013), and discussed language classrooms as potential CoP. The course included participants who shared a common professional domain and to some extent a shared repertoire of knowledge/resources, but were often situated in physically and culturally disparate contexts (see figure 1). This generated some rich and in-depth discussion of course materials and their relationship to participant experiences and beliefs. Mentors aimed to foster a sense of Wenger’s (1998) mutual engagement and shared repertoire by supporting these interactions, for example in the following steps:

- “Classroom culture” step:** A learning object based on a set of comparative articles discussing the role of the classroom teacher in different cultures (Alexander, 2009; Holliday, 2005; Zheng & Borg, 2014). This activity generated over 2000 comments in the first run of the course, and 1200 comments in the second run.
- “Classrooms as CoP” step:** A video lecture-based learning object highlighting the importance of the social nature of language learning, and how this can be enacted in the classroom. Learners were asked to reflect upon this concept, resulting in over 4000 comments in the first run, and nearly 2500 in the second.

- **“What is your classroom culture like?” step:** Participants uploaded photographs of their language classroom layout and discussed how they were using such a setting to teach languages. The ‘Padlet’ web application allowed participants to share these photographs and descriptions. This produced a rich visual resource with which participants interacted (run one: 750 photos, nearly 2500 comments; run two: over 400 photos, almost 1500 comments)

Of course, many comments were isolated (not part of wider conversations) and sometimes fairly simplistic reactions to the steps - the ‘low quality’ contributions warned of in Johnson’s (2001) discussion of online CoP. However, as outlined in section 3, mentor interventions focused on encouraging use of ‘likes’, ‘follows’ and participation in more active, in-depth discussions. Mentors also attempted to link conversations (and their participants) on similar or complementary topics toward increasing mutual engagement within the course. Figure 3 shows an example of a mentor linking one active discussion to another:

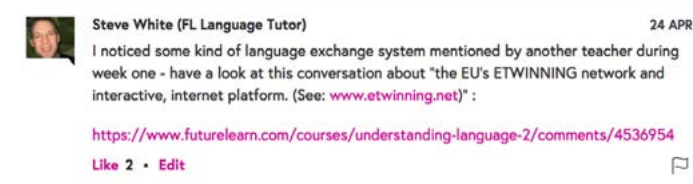


Figure 3: Example mentor intervention linking participant comments in ULMOOC2

### 4.3 Weekly video reviews

Each week, mentors created a video review of the week’s activity, summarising popular topics, interesting activity, and highlighting particular participant comments or questions (see the ULMOOC YouTube channel: <http://bit.ly/1WOSw2L>). These videos were uploaded for several purposes. First, the videos were thought to enhance the potential for mutual engagement in the course. Second, in the videos mentors were able to highlight relevant conversations happening in the discussion forums, so that learners could join them, and connect with those involved in them. Links to these conversations of interest were included in the learning object to encourage participant involvement in the creation of a shared repertoire of course content, and enhance the sense of community among participants. Mentors reported positive participant reactions to the video reviews, which encouraged discussion and reflection on language teaching issues. The video reviews had an impact on the learning community in that they were popular in terms

of views and comments (see Table 1), and the vast majority -more than 99%- of comments in the video review step in the platform were made after the video review was uploaded.

An example of the impact of these videos relates to a poll in which participants voted on the most important factors for language learning, in which effective learning and motivation were two of the options. In a video review, a mentor posed a question on whether effective teaching would foster motivation. The question sparked a significant number of comments and conversations in which learners reflected on such a relationship.

Week 1 video review	Run 1: Nov 2014	Run 2: Apr 2015
Total views	7,250	2,613
Total comments (in platform)	1460	621
Total comments (in YouTube channel)	57	12

Table 1: Number of views and comments, week 1 video review in ULMOOC runs 1 and 2

### 4.4 A CoP on Facebook

An indicator of the existence of CoP arising from the ULMOOC is the creation of groups in social media external to the learning environment (outside the Futurelearn platform). For example, participants spontaneously created a Facebook group during the first run of the course (<https://www.facebook.com/groups/UnderstadingLanguage/>), which currently has over 300 members. This group was created by participants within the ULMOOC forums in November 2014, and still receives regular posts by its members. In October 2015 (over one year after the group started) 24 posts were made in the group and 20 members were active in posting, liking or commenting in the community. This provides some indication of sustained engagement within the community in the pursuit of a joint enterprise.

### Mutual engagement during live chats

Mutual engagement amongst participants and sharing of resources was also observed in live chat feeds before, during and after Google Hangout sessions with lead educators on the course (conducted in weeks 3 and 4). The aim of these sessions was to provide opportunities for synchronous interaction between mentors and participants, and between participants themselves. It was hoped this would build a sense of community,

and help participants connect and share resources. In the first run, the live chat sessions in weeks 3 and 4 received over 3500 and 3000 views respectively, with around 700 comments made on each session. At times where technical problems delayed the start of live chats with educators, participants were observed discussing issues of mutual interest, sharing materials and organising online groups independently of MOOC mentors and educators.

### 5. Conclusion

This paper contributes a principled approach to mentoring practice on a language MOOC, drawing on ideas from CoP theory and literature on online learning design and mentoring. It reports initial activity on the ULMOOC from the field, in preparation for more detailed qualitative and quantitative research on the data produced over the 3 runs of the MOOC.

Both the ULMOOC and the FutureLearn platform were designed to encourage conversation and connection among participants. We aligned our approach to mentoring with these affordances to foster development of communities of practice online among language teachers. High levels of interaction in discussion forums and sustained activity within external networks formed around the course provide initial indications of the possible effects of this approach. Further research is needed into the ways in which communities of practice develop around specific MOOCs, drawing on Wenger's (1998) concepts of shared repertoire, mutual engagement and joint enterprise in CoP. This study reports preliminary work on the influence of the mentoring approach. Therefore, as future work, we intend to provide a more in-depth analysis of data from different runs of the ULMOOC to investigate the impact of mentoring on the development of CoP among language teachers.

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